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June 1994
Volume 65, No.6

LOCKSMITHS ENTER THE WORLD OF ELECTRONIC SECURITY

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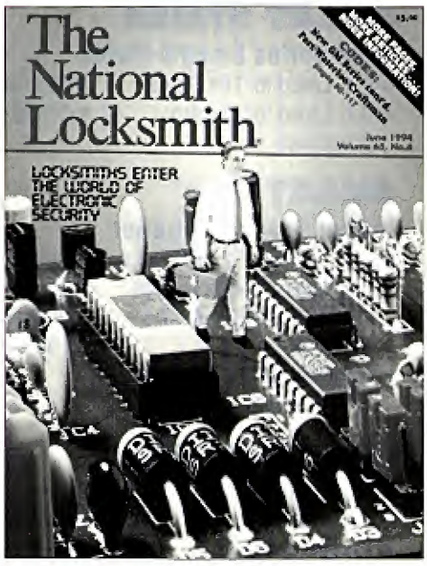

On The Cover

As the age of Electronics dawns, the locksmith enters a brave new world of profits and opp[illegible] can be part [illegible] of b[illegible]

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COMMENTARY

The Security Professional Council Goes to Bat for the Locksmith!

Marc Goldberg
Editor/Publisher

Last year we spoke about the Security Professional Council (SPC) and the program they were working on to promote the locksmith to the general public.

Since that time, the SPC has undergone many changes in direction. Their original concept was to provide the locksmith with TV and radio commercials which could be personalized to your individual company. The idea was that you would use the commercials to advertise on local cable television and radio.

The problem with that concept was that it required you to negotiate rates with TV and radio stations. Plus you had to pay for the commercials. This was a hassle for the locksmith and I believe it would have been an expensive marketing program for you.

At the recent NLSA meeting in Orlando, however, the SPC introduced a new proposal. The council will be hiring a recognized spokesman to star in several video presentations on security and crime prevention.

These videos will be made available to stations nationally to use as public service announcements. The main goal of the campaign, which will include print media, will be to urge the consumer to call a local locksmith to come out and conduct a free Security Survey.

I think this is a great idea. Many locksmiths are already willing to conduct a complimentary Security Survey, and now this idea will be promoted nationally at no cost to you. I believe there will be an 800 number used on the ads. The toll free number will be linked to a referral service so the consumer can get the name and phone number of a locksmith near them. I imagine there will be a way for you to be included on this list of locksmiths if you wish. (As more details come out, we'll keep you informed.)

When you conduct a Security Survey for a potential client, you have a world of opportunity in front of you. Check all doors and windows for security breaches. Test the garage doors and the patio doors for proper locks. Are deadbolts already installed? The customer still needs a high security strike to be safe from kick-in attacks. Is everything fine with their security? Probably not, but even so, you have the chance to offer rekeying services to put all the locks on one key.

I applaud the new direction of the Security Professional Council. Their members have devoted countless hours and personal resources to tackling a public recognition problem for the locksmith. Finally we have a chance to really tell our story to the people we serve.

Both the NLSA and ALOA have pledged very substantial sums of money to back this effort. Plus a number of manufacturers have indicated a willingness to help foot the bills. Although this campaign won't be cheap, it should generate a lot more publicity that one could normally expect from the initial investment.

That is because the subject of crime is so very important right now. The media will surely jump all over this story. It offers a positive angle on a story that is almost universally negative.

Although you cannot spend all day doing free Security Surveys, you can certainly factor them into your professional life. There are two good reasons to do so. First, you have a tremendous opportunity to sell your products and services. Second, by doing so you will be providing protection and safety to your customer.

What more could you ask for?

Marc Goldberg

LETTERS

Comments, Suggestions and Criticisms

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and length. Please address your comments, praise, or criticism to Editor, *The National Locksmith*, 1533 Burgundy Parkway, Streamwood, IL 60107. All letters to the editor must be signed.

Concerning Exits

Dear Marc:

I liked the article by Jake Jakubuwski, in the February edition, regarding Alarm Lock's model #103. I've used this lock on several occasions, and have always been pleased with the results.

In many applications, however, the suggested installation will not conform to many local codes, because it does not allow free egress to an individual exiting the building. It is, in most cases, illegal to "lock someone in." You must mount an approved, (clearly marked) "push to exit" type switch near the door.

You can also use a PIR motion sensor type switch to automatically release the door when someone approaches it from the inside, but you will still need to install a button near the door just in case the motion sensor ever fails.

If you just use the exit button, you should include a hold timer that will keep the door unlocked for several seconds, allowing a person to push the button, let it go, then open the door.

If your customer is adamant about having the capability of temporarily locking someone in (like a shoplifter, for instance), you may be able to get away with installing a momentary (normally closed) override switch, connected to the exit button. It would still be a good idea to check with the AHJ (Authority Having Jurisdiction) first. And, while this physiology may work well with children, you may want to remind your customer of the possible consequences of trying to detain someone who has already shown himself to be a criminal and could pose a threat to their safety.

Bob De Weese, CPL
Maryland

Frustrated Locksmith For Associations

Dear Marc:

Our industry is in its usual "knee jerk" mode – a lot of talking, a lot of motion, and no analysis, no answers.

The alarm industry has organized, and while we have been sitting in our own little factions contemplating our navels, they have been "pick pocketing" us for our right to install and service alarms. The government (already organized) is usurping our right to provide and service mailbox installation. Taxi drivers, tow truck operators and cops have the lion's share of the car opening business. Discount stores are rekeying locks and selling product for what it costs us. No wonder the average locksmith working for wages is starving to death.

In June, 1993 the ABC television program 20/20 aired a segment that shed dim light on the alarm industry. Because they already had the resources and machinery in place, the National Burglar & Fire Alarm Association in concert with the Central Station Alarm Association contracted with a national public relation firm to counter the attack on their industry. We couldn't mount a national campaign if it got on its knees for us. Oh, there's enough money out there, but it's rat-holed for independent uses. Heaven forbid that we should pool it and have it work for the good of the whole where it would be effective.

To prove my notion that self regulation is mandated, I offer the following: We need a national organization that is the clearing house for regional associations. The national body should have representatives of each of the associations (with equal representation) that sets standards for the nation. Each and every practicing locksmith should have to belong to a local association and be certified by a time-regulated schedule. The individual locksmith should be responsible to the association and the association should answer to the outside forces. The last thing this industry needs is another finger in the pie!

R.W. Staples, CML
Washington

Editor's Note: The good news is that the Security Professional Council is monitoring a national P.R. campaign to promote the locksmith and state associations as well as ALOA are working on licensing. (See this month's Bits & Pieces column.)

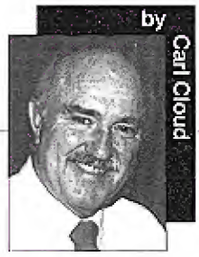
Tests In Question

Dear Marc:

I would like to comment on your proficiency testing program. The idea is excellent. What is bothersome to me is the form used to select answers to the questions. A test should be a learning experience. One effective way to learn is to seek the answer to a question. Such an action forces the student to research a certain body of material in order to find the correct answer to the question.

The four-given-answer system (that provides one correct answer and two irrelevant answers) that has been used in this country for many years is not a system that motivates the student to research the question. This has been shown by administering tests to people who know very little about the subject being tested. With the four provided questions system a person can guess at an answer and be correct a certain percentage of the time without knowing much about the material. It would seem more effective to not provide an answer. This forces the student to dig into the subject to find the answer, resulting in increased learning.

Dana Prouty
Massachusetts

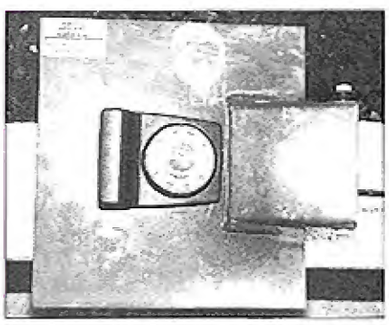


OPENING THE MESA FLOOR SAFE

"Some of those defunct, lesser known safe brands can be an opening challenge."

No matter how great a library of safe information you have compiled, occasionally you'll come across a brand without a single reference. Some of these safe manufacturers were a small enterprise with a limited production. They bid a contract to build a few safes and then went on to new ventures. Other companies made a big advertising splash, but within a few years were on the rolls of the bankrupt.

The Mesa Safe Company of Santa Ana, California, was one of those small manufacturers that never made the big time in the safe industry. I can only recall seeing one of their B rated chest models. It had a simple bolt work design and utilized a LaGard



1. A 'B' rated safe door by Mesa Safe Co

1800 series lock. There was nothing to stir an interest or to make note worthy. A few years ago I read of the company going out of business.

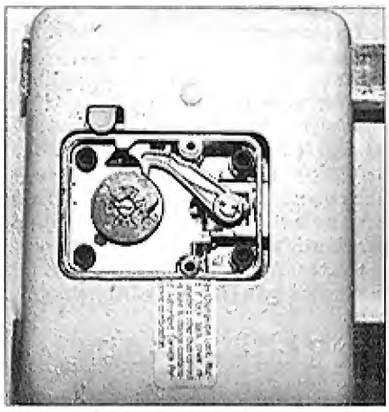
A customer called to say she had just purchased a house and found a locked safe in the floor of a closet. The previous owner stated the safe had been installed during the construction of the house. They had never used the safe and didn't have the combination. The brand was Mesa. *(See photograph 1.)*

Upon inspection of the safe, I found a LaGard dial and a lift handle dial ring. From the only other Mesa Safe I had seen, I assumed the lock to also be a LaGard. The dial turned stiff, but I was able to feel the pickup of the wheels and a slight contact area.

2. The U.S. Security floor safe is equipped with the LaGard lock and a dial ring/handle design.

The dial was center of the door, which ruled out a simple latching of the door by the combination lock bolt. Another safe manufacturer that used this dial/handle design is U.S. Security Safe *(see photograph 2)*; who used the LaGard lock combined with a metal box housing and dual locking bolts as well. *(See photograph 3.)*

At this point, I wasn't sure what

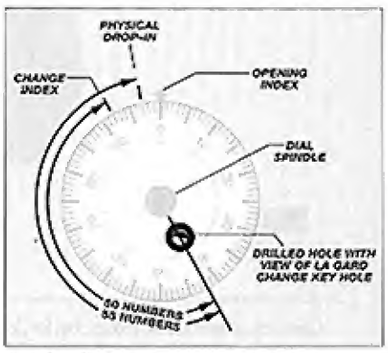


3. The LaGard lock is installed into a metal box or pan. The lock controls two locking bolts.

was behind the door face. It probably was a simple locking device with a lock mounted right hand. I opted to pull the dial and drill a hole at the assumed fence location of 97.

Well, surprise, surprise! When I looked into my drilled hole, I could see the edge of the wheel pack, but no fence was in sight. Being a little perplexed, I turned the stub of the dial spindle and aligned the wheel gates to the hole. Looking down through the gates was a pretty sight, the change key hole in the back cover of the lock! How much luck can one guy have?

Being able to see the change key hole is a great reference point. Fifty numbers from the change key hole is equivalent to the location of the



4. After finding the change key hole a transferring tool by LeRoy Edenburn Enterprises was used to find the correct drop-in point.

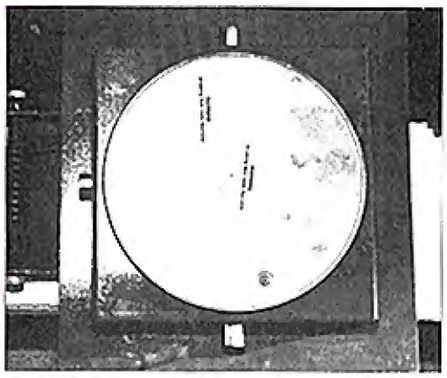
change index line on the dial ring (92). Eight numbers to the right of the change index is the opening index.

Three numbers left of the opening index is the drop-in (97). All I had to do was transfer the wheel gates fifty-five numbers counter clockwise from my view at the drilled hole. (50+8-3-55.) *(See illustration 4.)*

To find the drop-in point, I used a great transferring tool by LeRoy Edenburn Enterprises. It comes as a

two-part kit. One part is a drill point plotter to be used on photos or scaled drawing for locating exact drill points. The part I used was the transfer dial ring and adapter pointer that attaches onto the protruding dial spindle.

The transfer dial ring was centered over the spindle with a zero reading at the drilled hole. By using the adapter pointer, each wheel gate was brought to the center of the hole. A combination number was noted from the location of the pointer on the ring.



5. The large diameter back cover is secured by only two screws.

With the known combination that would bring all wheel gates to the hole, it is time to transfer.

Without moving the transfer ring, a line was penciled on the door at fifty-five. This would be the physical drop of the fence. The ring was turned and the zero placed on the drawn index line. The combination numbers that moved the wheel gates to the hole would now move them to the drawn line or the drop area of the fence. The safe is open.

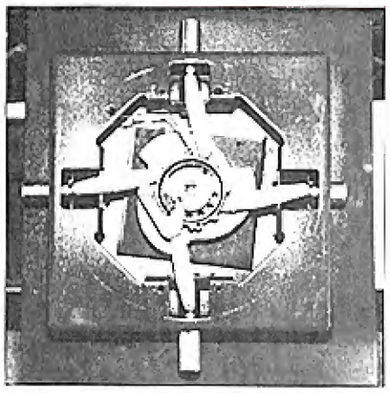
As the door swung open, my assumptions were confirmed by the large disk back cover of the lock. This is the LaGard four bolt lock, model 2503. *(See photograph 5.)*

Only two screws hold the back cover. The screw holes are relieved and act as a break away area in the event the spindle is punched into the safe door. If the spindle is punched, the drive cam is pushed against the back cover causing the excessive pressure on the relieved screw holes. As the cover falls away, a relocker on each locking bolt is fired.

A word of warning when drilling this lock. When the dial has been removed from the spindle, there is nothing to support the lock from moving downward into the door. The entire lock, the wheel pack and its housing, the locking bolt cam or yoke and the floating square piece of hard plate, are resting upon the drive cam. A guide on the back cover centers and keeps the drive cam in alignment and keeps all the parts supported.

The normal drilling procedures for opening this door require pulling the dial. This causes all of the previous mentioned parts to be resting upon the back cover. If the pressure of drilling upon the hard plate is excessive, the relieved area around the cover screws will break away. All the parts will fall into the safe body and the four relockers will fire! Here's a little help. The drill point for the relocks is from the center line of the dial, 3-11/32" vertically and horizontally. Use a hook to pull up to release.

Photograph six shows the inner door with the cover removed. The bolts are in their locked position.

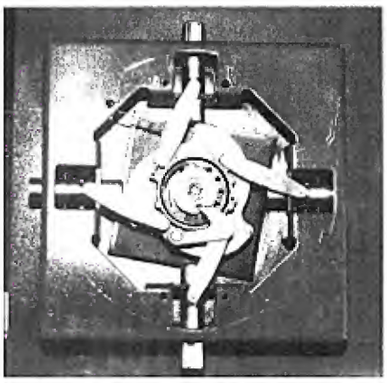


6. The inner view of the LaGard lock model 2503. The lock is shown in the locked position. The drop-in of the fence is at 47 (viewed from dial side of door).

The nose of the lever has just entered the gate of the drive cam. The physical drop-in of the fence will always be to the right side of a locking bolt. Looking at the door from the dial side, this lock has a drop-in or drill point for the fence at 47.

The square metal box or pan that contains all of the lock parts is welded to door slab. According to the rotation of the pan when it is welded in place, determines the hand or the drop-in of

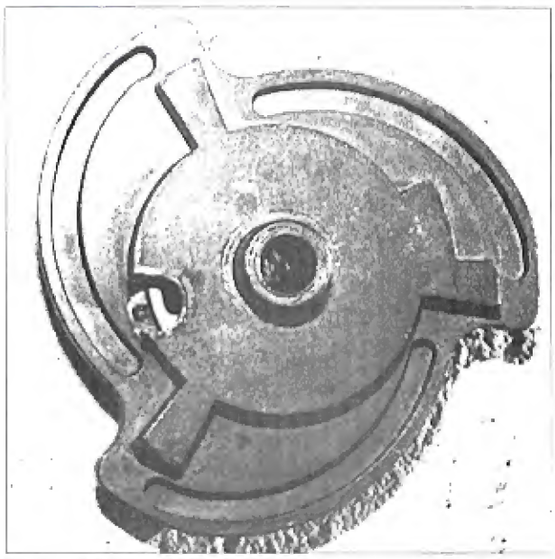
the lock. There are only four possible locations for the drop-in and they are the same as for a standard combination lock. That is, 97, 22, 47 or 72.



7. The LaGard in the open position. Only the opening side bolt retracts flush with the pan.

In photograph seven the yoke has been rotated and has retracted the locking bolts to their unlock position. The bolt on the opening edge of the door is the only bolt withdrawn flush with the pan.

The locking bolt cam, or as LaGard calls it, the 'Combination Lock Yoke,'

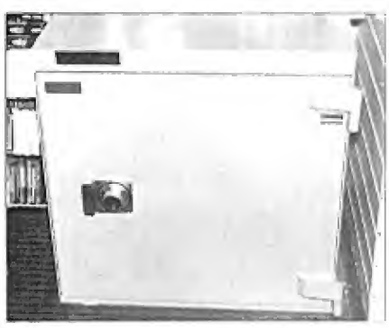


8. The drilled hole through the 'Combination Lock Yoke.'

is seen in photograph eight. This is the x-ray view as seen looking through the door. The drilled viewing hole is centered at the edge of the wheel pack. The bearing surface is the post in the center of the yoke. Since the hole presents no problems to the operations, the yoke is reinstalled into the lock.

U.S. Security Safe Co. uses this LaGard lock in their larger slab door models. *(See photographs 9 and 10.)* Because of the wide door, the second horizontal bolt is not used.

Notice the location of the 'dog leg' wire (toggle spring) in photograph ten

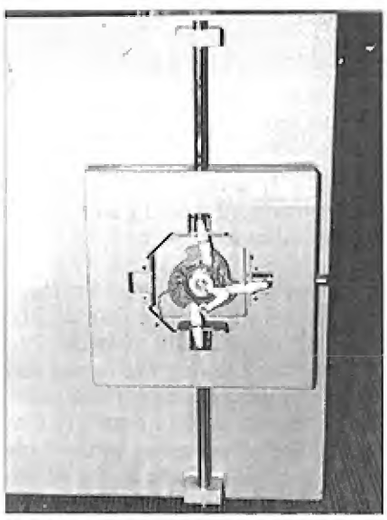


9. This U.S. Security chest utilizes the same dial and handle assembly as the floor safes.

as compared to the one in photograph six. The pan has been installed one-quarter turn counter clockwise. This changes the drop-in point twenty-five numbers. Instead of a drop-in point of 47, this safe would have a drop-in at 72.

Removing the large lock cover for the first time on an upright chest can be an unnerving experience. Things have a tendency to fall out of the lock and onto the floor. The links between the yoke and the locking bolts are a cast Zamac. The stepped bars have a formed pin on each end that fit into a hole in the yoke and locking bolt. The fit of the pins is very loose. Any jar of the lock while the back cover is off will cause the links to fall out.

If you encounter problems installing the back cover, check the size of the guide pins to the receiving holes in the pan. There are only two guide pins, but one is



10. The horizontal bolt is removed on this wide door model. The rotation of the pan during installation determines the drop location of the fence. This drop is 72.

larger than the other. Always run the combination and engage the lever into the drive cam before attempting to install the cover. If the cover does not drop into place, turn the dial slightly and start the retracting of the locking bolts. This will align the lock and the cover will seat into place.

For more information on the transferring tool, contact: LeRoy Edenburn Enterprises, 57 N. Huron St., Ypsilanti, MI 48197; or call 313-485-8769.

NEWSMAKERS

New Products and Industry News

American Dynamics CCTV Interface

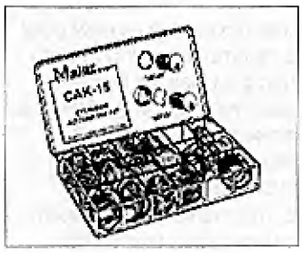
American Dynamics has introduced a new Graphic User Inter-face (GUI) software package to control matrix switcher/controllers for CCTV security/surveillance systems.

A.D.'s "GUI' allows users to create complete graphic floor plans, or "maps", using an integral color computer-aided drawing (CAD) software package and allowing "zoom-in" inspection. Over 7,000 floor plans may be stored. Icons representing the location of cameras, alarm points, gates, pan/tilts, etc. may be placed anywhere on the maps. An operator can quickly and easily call cameras to monitors; control pan/tilts and domes; handle alarms; and operate other matrix switcher functions via a touchscreen, mouse or trackball.

For *FREE* Information Circle 406 on Rapid Reply

CAK-15 Cylinder Accessory Kit By Major Manufacturing

The CAK-15 Cylinder Accessory Kit from Major Manufacturing contains an assortment of hardened steel cylinder guards, plus an assortment of cylinder collars molded from an "Engineered Plastic." Unlike aluminum or steel collars that can chip, scratch, or bend, collars from engineered plastic will retain their finish and shape. They also resist damage due to the ozone and by ultra violet rays. The CAK-15 kit contains four sizes of collars in aluminum, brass and duranodic color. Also



included are cylinder guards in the same finishes. The kit is packed in a plastic box for convenient storage, and parts are also identified for re-ordering. Refill collars are available in packs of six.

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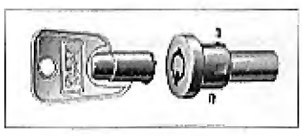
Chicago Lock Introduces New High Security Lock

One of the first products from the new strategic alliance between Chicago



Lock Company and CamLock Systems, Inc. is a new lock designed to provide increased security for bulk vendors. This new lock offers many theft-resistant features including a unique key way and sequence of 6 tumbler operation. Restricted key numbers are available as are thousands of key combinations. The lock is double pinned for smoother operation and added strength.

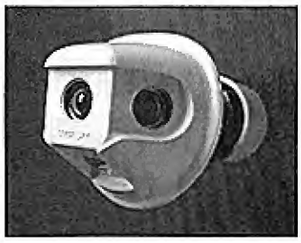
For *FREE* Information Circle 404 on Rapid Reply

Door Spy Door Viewer

Door Spy, a revolutionary four-way security viewing device, is now available.

Unlike common peepholes, Door Spy permits 180 degree visibility — 90 percent distortion -free — allowing the viewer to see fully, forward, right, left and down from inside the door by simply rotating the eyepiece.

Developed in conjunction with the Technology Commercialization Center at Bradley University in Peoria, Illinois, Door Spy is a fully



patented, UL-listed fire door viewer. Its sturdy steel tube and Pyrex lens maintain the structural integrity of fireproof doors. Sleek and attractive, Door Spy is encased in strong and durable ABS plastic.

For *FREE* Information Circle 403 on Rapid Reply

DoorKing Introduces Digital Lock

DoorKing's Model 1507 is a completely programmable digital entry system that can store up to 1000 four digit entry codes, and includes two form C dry contact relays and a time clock. Options include slave keypads and a

printer to report all activity in real time mode.

The four digit entry codes can be programmed to operate either of the two relays in the 1507. In addition to the four digit entry codes, the system can be programmed with up to 6 five digit entry codes. Two slave keypads can be connected to the unit to allow access of the entry codes from a remote location. An internal time clock is built into the system and will allow the user to program up to four time zones. Each time zone can have a range of entry codes, and valid or not valid days and times. The systems optional printer will record all activity at the 1507 in real time mode.

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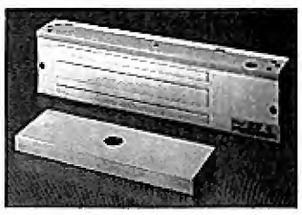
Emlock By Security Door Controls

The most aesthetically pleasing EMLock on the market has been introduced by Security Door Controls



(SDC). Eliminated from the new SDC EMLock design is the black epoxy. The devise is totally housed in an anodized case.

The 1511 has greater space for wire connections. Additionally, the device has an interlocking assembly, allowing an installer to simply slip the lock onto the

mounting plate. Contained in a welded steel construction that offers superior strength, SDC has increased the holding force from 1,500 to 1,650 pounds. With the elimination of epoxy in the design, it lessens the toxic fumes in the event of a fire emergency, making the new device environmentally more desirable.

For *FREE* Information Circle 401 on Rapid Reply

Free Ruler By Numberall

A unique Impression Length Ruler which aids customers in determining the proper character sizes which best suit their marking requirements is now available from Numberall Stamp & Tool

Co., Inc. This gage facilitates determination of impression lengths directly in the areas to be marked, without the need of a separate ruler and accompanying calculations.

The easy to use ruler contains 16 separate scales corresponding to Numbering Heads on one side and 11 scales corresponding to Typeholders on the reverse. The scales are printed in actual character sizes and styles to further assist in the selection process.

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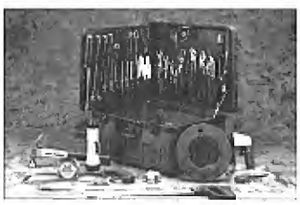
JTK-51 Installer's Kit By Jensen

Jensen Tools has introduced a new tool kit for electrical construction, installation and maintenance. If a job involves racks, blocks, panels, mounts,



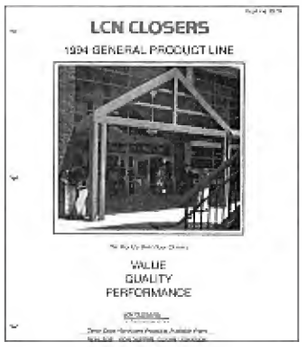
wiring and/or cable, the JTK-51 Master Installer's Kit should help make fast and efficient work of it. This Kit contains all the tools specified by applicable certification programs to construct, assemble, mount, modify, and finish the job.

For *FREE* Information Circle 399 on Rapid Reply

LCN Line Brochure

LCN, maker of the broadest line of hydraulic door closers and automatic operators offers its new General Line brochure.

Products highlighted include: Overhead Concealed Closers, Handed and Non-



handed Surface Mounted Closers, Life/Safety Closer/Holders, Electromagnetic Holders, Automatic Door Operators, and High Security Closers. Many of the products depicted comply with the requirements of ADA.

For *FREE* Information Circle 398 on Rapid Reply

Low-Lux CCD Camera By Watec America

Watec America Corporation's WAT-902A high resolution, low lux, ultra-minature black and white CCD camera features a

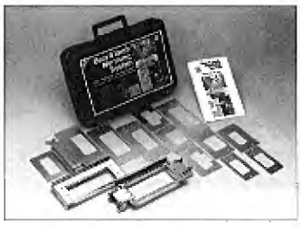
three-position auto electronic shutter and has auto iris capability. The unit has a CS mount, two-position Gamma switch and measures 1.34"x1.34"x1.88".

For *FREE* Information Circle 397 on Rapid Reply

Mortising Kit By R.J. Stuckel

The R.J. Stuckel Co., Inc., has introduced its new door and jamb mortising system that provides for fast and accurate mortising of hinges, strike plates, dead bolt receiving plates and door lock plates. All key components of this system are precision made from durable high grade steel.

For use with a standard power router, the complete Stuckel kit comes in a convenient, sturdy plastic carrying case that has fitted compartments for readily accessible component storage. With the templates provided, error-free fit, alignment and finish are assured for flawless results time after time. The installer can now mortise doors and jambs without damage or time consuming hammer and chisel work. Additional



templates for uncommon strike plates, 4 1/2" and 5" hinges, custom applications, as well as replacement parts, are readily available from the manufacturer.

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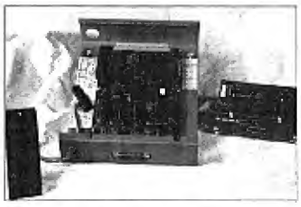
PXL-100 Proximity Control By Keri

Keri Systems' PXL-100 is a proximity access control which can be applied as a stand-alone, "smart reader", or as part of a network of



128 smart readers. Standard features include two reader direction control and anti-passback, RS232 output for printer, PC or modem. Simple plug-in options provide an RS485 communication port, 32 character LCD display, additional inputs and outputs.

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Smoke Curtain By Omni Environmental

Omni Environmental has just introduced the "Smoke Curtain", security system which can readily be installed by locksmiths. A powerful smoke generating unit capable of producing large quantities of safe, non-toxic, non-contaminating, water based smoke.

Used as a Security Device, the "Smoke Curtain" generator can be a stand alone unit or can be wired to a traditional alarm system.

Since police response time can vary from a few minutes to several minutes after an alarm is triggered, there is plenty of time for thieves to "smash and grab" thousands of dollars worth of product, and the thieves know it. However, with the "Smoke Curtain" Security Device installed, should the alarm be activated, immediately the premises is filled with a dense white smoke. The intruder finds himself in a building unable to see.

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GENERAL SECURITY

THE SCHLAGE A SERIES KNOBSET

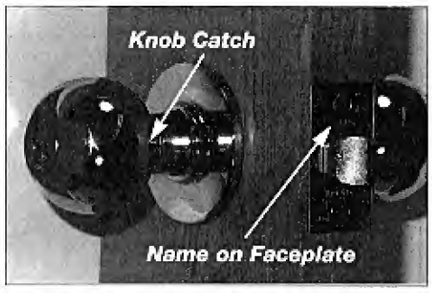
Test Article #52

by Giles Kavelage

Schlage is often one of the first brands of lock that comes to a locksmith's mind when a commercial lockset is needed. The A series Schlage is an ANSI rated Grade 2, bored lockset. Ideal for light to medium duty commercial and heavy duty residential applications, it is available as a complete leverset in passage (A10S), privacy (A40S), and dummy trim (A170 surface mount) functions

The entrance function (A53PD) comes as a lever X knob, lever on the outside and knob on the inside, and does not meet ADA requirements.

The round knob is available in the functions listed above plus closet latch (A20S), exit lock (A25D), patio lock (A30D), communicating (A43D or A79PD), Hospital Privacy (A44S), Service Station (A55PD), classroom (A70PD), dormitory (A73PD), storeroom (A80PD), and hotel (A85PD).



1. The Schlage A series knobset can be identified by the company name on the faceplate of the latch. Notice the small access hole to the knob catch on the side of the spindle.

This lockset is durable, versatile and serviceable. Parts are available through most major locksmith distributors. The quality of the lockset justifies spending time to repair a malfunctioning lockset. The cylinder's high tolerances offer protection against poorly cut keys or keys that have similar but not identical bittings. This, of course, also makes it very suitable for masterkeying.

The high tolerance level of the Schlage lock also make consistent keying between cylinders. For example, if you cut a number four depth on space one of a Schlage key, and pin the first chamber of 20 different cylinders using a number one bottom pin, odds are great that the top of the pin will reach the shear line almost perfectly for every cylinder

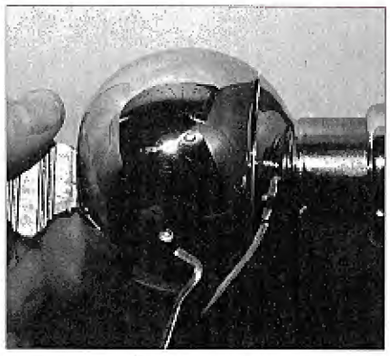
The keyway of the Schlage lock is sectional. The standard keyway is the "C" keyway. If no other keyway is specified when ordering the lockset, this is the keyway provided. The second most common keyway is the "E" keyway. "CE," "EF," "F," "FG," "G" and some numbered keyways are less common, but may be encountered on A series locksets. Additionally, high security Primus cylinders may be used in A series locksets.

Identification

Manufacturer identification of the lockset is found on the faceplate of the latch or deadlatch. *(See photograph 1.)*

Cylinder Removal

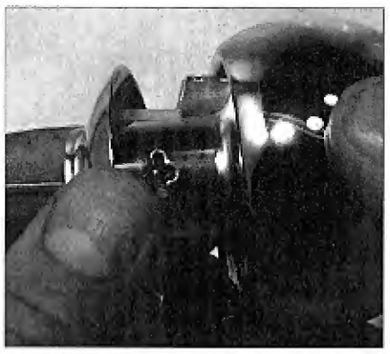
Removal of the lock cylinder is easily accomplished if an operating key is available. If no operating key is available it is necessary to either impression or pick the lock. (Removing the cylinder without a key will be covered in a future article.) Although the lockset may remain on the door, the outside knob must be removed to service the lock cylinder. Insert an operating key, turn it 90 degrees in either direction, insert a

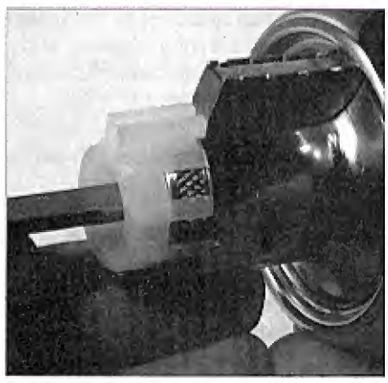

2. To remove the outside knob, turn a working key 90 degrees, depress the knob catch, and pull the knob off the spindle

Schlage spanner wrench, awl, probe, or end of a heavy-duty paper clip into the knob catch and pull back on the knob. *(See photograph 2.)*

With the knob in your hand, push the lock cylinder face through the knob forcing the rear of the knob trim loose. *(See photograph 3.)* It is recommended to use your fingers to remove the rear portion of the knob trim from the main knob trim body. It's tempting to use a screwdriver to pry this loose, but it is very easy to damage this part.

Grab the tailpiece from the rear of the knob and pull outward to remove


3. Push the cylinder through the back of the knob.

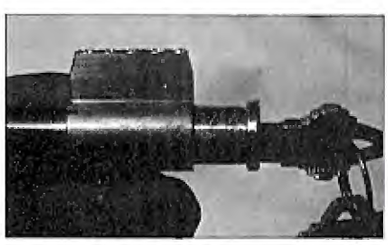


4. Pull on the tailpiece to remove the cylinder from the knob.

the cylinder from the knob trim. On the Orbit style of knob trim, there is a plastic or metal spacer around the rear and bible portions of the cylinder to add support. *(See photograph 4.)* Also, the tailpiece and driver on the cylinder of the Orbit style lockset is longer than its sister trim designs, allowing it to properly engage in the lock chassis during re-installation and operation.

With the cylinder out of the knob, depress the retainer cap pin and unscrew the retainer cap, tailpiece and driver. *(See photograph 5.)* Then use a plug follower and gently slide the plug out of the shell. *(See photograph 6).*

5. Remove the plug retaining cap from the back of the cylinder.



6. Use a plug follower to slide the plug out of the cylinder for service.

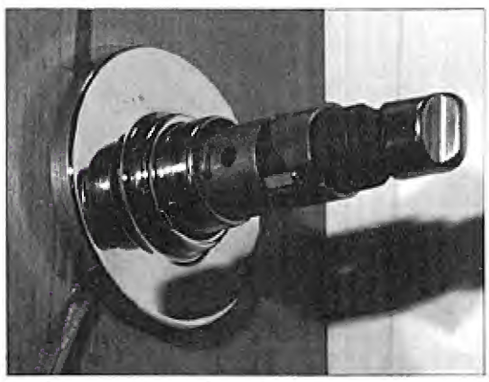
Service as necessary and reassemble following the reverse procedure.

A noteworthy comment on the reassembly of older cylinders is due here. Older cylinders have a separate driver and tailpiece. The driver is seated in the retaining cap and the tailpiece slides through the center of the driver. Before attaching this assembly to the plug a little disc is placed between the driver/tailpiece and the plug.

It is often assumed that this little disc is simply used to keep dirt from entering the plug and lubricant from getting back into the chassis area.

However, that little disc performs a vital security function for the cylinder. Apparently, on these older cylinders, a nail can slide though the front of the keyway, through the plug and onto the tailpiece. The tailpiece has a little dimple at the center of it, forming a good seat for the nail! A swift hammer tap of the nail from the outside pushes the tailpiece out of the driver and into the lock chassis.

Because the tailpiece is used to prevent the knob catch from releasing the knob without turning the key, when it gets pushed into the chassis, it no longer secures the knob catch. The



7. Removing the inside rose.

knob can then be removed without a key and the lock opened with a screwdriver.

The disc, which many locksmiths - especially younger ones - believed to be a dust cover, prevents a "nail" attack by not allowing the nail to touch the driver or tailpiece and distributes the force of an attack over the inside surface of the driver. Newer style drivers and tailpieces have eliminated the necessity of the security disc.

Removal of Lockset From Door

Remove the inside knob by depressing the knob catch and pulling the knob. A gentle prying of the rose with a screwdriver in the slot near the 7 o'clock position releases the rose, exposing the inner mounting plate. *(See photograph 7.)* Two screws hold the main lock chassis to the door via the mounting plate. Remove these two screws and pull on the outside knob to remove the chassis from the door. *(See photograph 8.)* The latch or deadlatch may be removed by unscrewing their mounting screws and pulling straight out.

Reassembly is virtually the reverse of the removal. Two points needs to be touched upon, however.

8. Remove the two screws and the mounting plate to remove the knob from the door.

1.) When installing the chassis over the latch or deadlatch, it is imperative that the lock housing fit over the latch or deadlatch prongs and the retractor engaging the latch bar.

2.) It may be necessary to adjust the lockset for door thickness. This is accomplished by rotating the outside rose inward for 1-3/8" thick doors, outward for thicker doors. Schlage recommends measuring the distance from the housing to the rose to be 1/16" for 1-3/8" thick doors to a maximum distance of 3/16" from the housing to rose for 1-7/8" doors. This is the maximum outward adjustment.

Continued on page 118

AUTOMOTIVE SECURITY

FORD 10 – CUT SYSTEMS Part 1

Test Article #53

by Tom Mazzone

Ford Motor Company introduced its revamped lock system to its upper end cars in mid year of 1984. This newly designed, ten cut system was the prelude to what would later be the standard for all Ford vehicles with very little exception. While intimidating at first, the locksmith can quickly adapt to this new structural change.

Ford and Lincoln Mercury implemented this system in the 1984½ Ford Thunderbird, Mercury Cougar, Lincoln Continental and Town Car. As the years passed, however, more vehicles have been added to this list of "ten cut" vehicles. Throughout the years modifications to the ten cut system have also followed. *(See photograph 1.)*

1. The ignition and door lock for the first version of Ford's ten cut system.

The 10 – Cut Configuration

The first noticeable change between the older, standard five cut system and the ten cut system is the dimension of the key blade. While the new key remains a non-grooved double sided convenience key, it is .110" longer and slightly narrower than the previous H51 five pin blank. While .110" is less than 1/8", it is very noticeable when laid side by side with the standard blank.

Unlike its five cut predecessor that uses pin tumblers, the ten cut system employees wafer tumblers. In this first version of the system all of the wafers in both the ignition and the doors are on one side of the lock. In the door lock, the wafers come up from the bottom, while in the ignition the wafers come down from the top. This makes key generation easier as compared to servicing locks with dual opposing or staggered wafers, a change they have made to many of the later ten cut systems.

With ten cuts as opposed to five on the standard pin tumbler blank, the next noticeable change is the spacing. With twice as many cuts on the new blank, the cuts are much closer together. In the first version of the ten cut system the first six cuts of the key operate the door while the last six cuts operate the ignition lock. This, of course, has also changed and various tumbler configurations currently exist. These variations will be covered later in this series of articles. *(See table 2.)*

Year	Car Line	Model
1984½ - Present	Ford	Thunderbird
1984½ - Present	Lincoln	Town Car
1984½ - Present	Lincoln	Continental
1984½ - Present	Mercury	Cougar
1986 - Present	Ford	Taurus
1986 - Present	Mercury	Sable
1986 - Present	Ford	Aerostar
1987 - 1990	Ford	Escort
1987 - 1990	Mercury	Lynx
1987 - Present	Ford	Tempo
1987 - Present	Mercury	Topaz
1992 - Present	Ford	Econoline Van

2. This is a table of Ford, Mercury and Lincoln vehicles using the first version of the Ford ten cut system. The door locks in these vehicles use the first six cuts of the key while the ignition uses the last six cuts of the key. Spaces five and six are shared by both the door and ignition lock.

Returning to the first version, simple addition tells us that if the first six cuts operate the door and the last six cuts operate the ignition, there must be twelve cuts, right? Wrong. While the first six cuts do operate the door, positions five and six are common to the ignition. If position five has a number three depth and position six has a number five depth, these are the last two positions in the door lock. These two depths are also the first two depths of the ignition lock.

See example below:

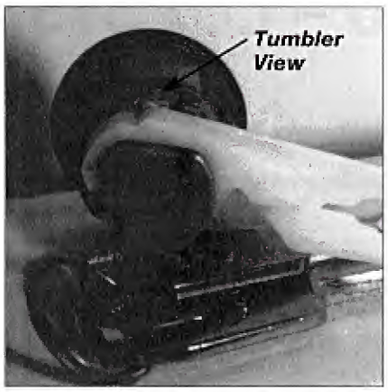
Space	12345678910
Bitting	3224354232
Door	322435
Ignition	354232

As you can tell by this code, the same maximum adjacent cut safety factor of two applies as is with General Motors locks. This rule greatly helps during key generation as it greatly limits the number of allowable combinations.

Generating A New Key

Today there are many different methods for generating keys to the Ford ten cut lock including try-out keys, lock readers, wafer reading, impressioning and lock removal. To generate a key in a vehicle using version one of the ten cut system, the door lock is the place to start. The

door lock houses six wafers (cuts one through six of the key) which are quite hefty in design. Wafer reading by sight can be somewhat difficult because of the limits of the keyway milling. Impressioning is a realistic option because of the thickness and sturdiness of the wafers. Remember, the tumblers in the door lock come up from the bottom.



3. Reading the wafer depths can be accomplished by inserting an uncut key and reading them through the back of the lock.

Probably one of the easiest ways to generate a door key for a Ford wafer lock, however, is to pull the retainer clip and remove the lock for direct reading. In most cases the clip is accessible at the side of the door and is easily removed. While removing the locks you will notice the pawl is made of plastic. Holding onto the linkage, slip the pawl up and off the linkage. Use a vice grip or similar tool to grasp the linkage to prevent it from dropping into the door cavity.

In late model years it is necessary to remove the door panel and handle in order to remove the lock. In this case, it is suggested that an alternate method be used.

With the lock in your hand, the wafer depths can be read from an opening in the back of the lock. To start, take a key blank and insert it fully. Estimate the height of the closest tumbler based on its distance from the shearline. Obviously, the closer to the shearline the top of the wafer is, the shallower the cut depth. *(See photograph 3.)*

Withdraw the blank slowly and record the depths of each wafer in sequential order. Keep in mind the MACS factor as mentioned earlier. If you are not sure of a specific depth, cut that space shallower until you determine the correct depth for that space.

As mentioned earlier in the article, the wafers are all on one side of the lock. This makes cutting only one side of the key necessary for trial purposes. This also gives you a second chance to correct a mistake using the uncut side of the blank. Typically the wafers come upward from the bottom side of the plug, making it necessary to insert the key with the cuts facing downward.

Your key should operate the door smoothly with no bind, clicking, or roughness. Wear in the lock can permit an incorrect depth to operate. Make sure the cuts in the fifth and sixth position are exact because the ignition lock is a side bar type and its tolerances can be for less forgiving than a wafer lock. Reinstall the door lock cylinder and linkage and check operation. You are half done! As generating the ignition key is more involved, we will continue this procedure next month.

SPECIFICATIONS

1200CM

Code Card	X56
Tip Stop	Ford 10-cut tip stop 1054R
Cutter	CW1011

FRAMON

Cut Start	.100"
Cut to Cut	.0925 or FD84 spacing block
Cutter	FC8445
Clamping	FD84 spacing clip

CURTIS

Cam	Ford 3
Carriage	Ford 3X Spacing and Depths using Code Card 58.

	SPACING	*DEPTHS*
1	1.033	.352
2	.941	.326
3	.848	.300
4	.756	.274
5	.663	.258
6	.571	
7	.478	
8	.386	
9	.293	
10	.201	

KEYBLANK: Varying key blanks have been produced for vehicles using the Ford 10-cut system. Many blanks supersede, interchange or have bow variations. Refer to the newest keyblank reference manual for correct key information on your specific model. Following are some common blanks. All-Lock 84F-D, H60 Curtis, 321645 Briggs and Stratton, 84FD Jet, H60 Silca, see catalog for current substitutes.

ELECTRONIC SECURITY

WHEN WIRING GOES RIGHT

Test Article #54

by Greg Voorhees

From previous lessons in basic electronics, we know that all conductors of electricity have a resistance; this includes the coil of a solenoid, a switch or relay contact, and even a fuse. We also know that the higher the resistance of a conductor, the harder it is for electricity to be conducted. In fact, if resistance is too high, components within the system may not operate or can overheat and become damaged.

Although we often don't realize it, wiring, too, is a component of the electrical system. It, too, offers resistance. And, if its resistance is too high the needed electricity cannot flow to operate the components. Therefore, it is critical that the correct wire be used.

Generally, there are three factors that affect a wire conductor's resistance: the conductor's composition (the material it is made of), the diameter of the conductor, and the length of the conductor. Experienced electricians can identify these as the current-carrying capability, the power loss, and the voltage drop of a particular conductor. For beginners, however, the following explanations are adequate.

The material from which wire is made varies by the use of the wire.

MATERIAL	RELATIVE CONDUCTANCE (Based on Silver at 100 percent)
Silver	100
Copper	98
Gold	78
Aluminum	61
Tungsten	32
Zinc	30
Platinum	17
Iron	16
Lead	15
Tin	9
Nickel	7
Mercury	1
Carbon	.05

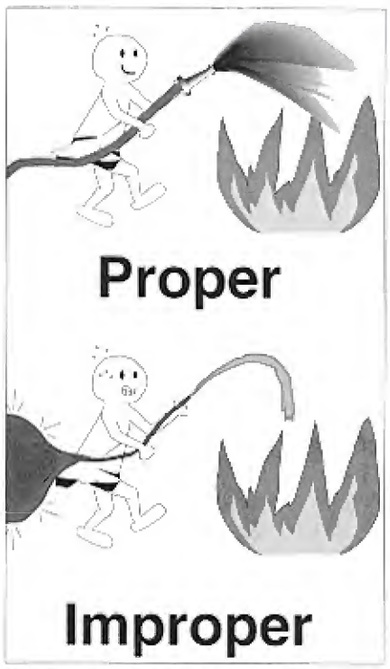
(*Basic Electricity*, Dover Publications, NY, 1962)

1. Copper is by far the most common wire material used for alarm and access control cable and wiring.

Two common substances for making standard wire are aluminum and copper. While aluminum is typically cheaper and lighter to use, its tensile strength and conductivity are lower compared to copper. While there are many uses for aluminum wire, almost all alarm and access control applications use copper wire. *(See table 1.)*

Wire diameters also affect the resistance or flow of electrons. Remember, the flow of electrons is alot like the flow of water. For example, in order to put out a fire, a

special large diameter, high pressure hose is used that can dump thousands of gallons of water per minute. Now imagine trying to dump the same amount of water using a soda straw. It won't work. Either the small diameter of the straw is going to restrict the flow of the water, or, the pressure



2. Specially designed hoses are needed to handle the flow of water needed for the large quantities of water used in extinguishing a fire.

from the water is going to burst the straw. *(See illustration 2.)*

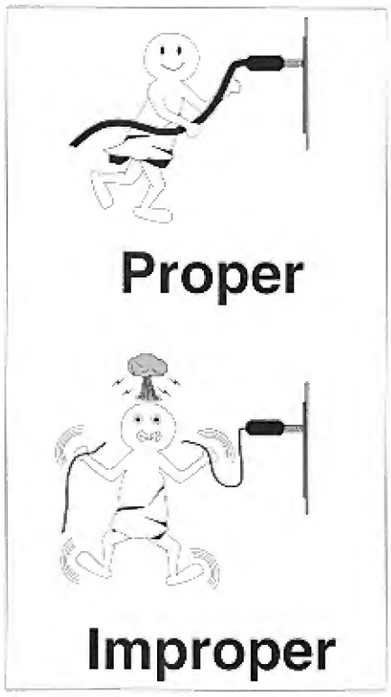
Pushing electrons through wire is identical. Given a certain current or flow of electrons (amps) and a pressure (voltage), if a wire is too thin either the small diameter of the wire is going to restrict the flow of electrons, or the pressure of the electron flow is going to heat up and burn the wire. The characteristic of preventing electrons from flowing, of course, is called resistance. If there is too much resistance either enough electrons cannot flow to properly operate the loads or the wiring will burn up. *(See illustration 3.)*

By enlarging the wire diameter, however, there is more room for electrons to move. So, in general, the bigger the diameter of the wire the better. However, while oversized wire is okay it is simply a waste of money. The correct diameter wire affords you the safety and reliability required by the application, while maintaining the lowest cost to both you and the end user.

In classifying wire sizes a standard unit size is used in order to compare the resistance and size of one conductor with another. The adopted unit of measurement for the diameter is the mil (.001") and the length is 1'. A piece of wire 1mil in diameter and 1' in length is referred to as a Mil-Foot of wire.

Another unit for comparison is the circular mil or CM. This is simply the area of a cross-section of wire. Because most of the wire we use is round, the area of the cross-section is determined as though we were looking for the area of a circle. This is simply done by multiplying the diameter by itself or the diameter squared (CM = D2).

As a more convenient method for referring to wire size, today's wire diameters are measured in units



3. Wiring, also, must be able to handle the necessary flow of electrons. Having wire not suitable for the job is dangerous.

called gages. In the United States the standard for gauging is the American Wire Gage system or better recognized as AWG. In this system, each wire size is given a gage or

Continued on page 24

Continued from page 21

number. The higher the number the thinner the wire, and conversely, the lower the number the thicker the wire.

For example, a 0000 AWG wire is very thick at about .460", almost half of an inch, in diameter. A 40 AWG wire is extremely thin at about .0031" in diameter. If the two wires above are of the same length, made of the same material and are tested for resistance, the 40 AWG should give us more resistance or a higher ohm reading.

Using standard annealed solid copper wire we find that the resistance for 1000' of the 40 AWG wire is 1070Ω. The resistance for the same length of 0000 AWG wire is .0500Ω. The 40 AWG wire shows much more resistance than the thicker 0000 AWG wire.

As a way of comparison, your typical jumper cable diameters run from 8 AWG on the thin end to 2 AWG on the heavier end. Many welding cables run from 2 AWG to 0 AWG. Alarm and access control installations typically use wire ranging from 12 to 26 AWG with 18 AWG and 22 AWG being the most common. *(See table 4.)*

This wiring is available either solid or stranded. While stranded wire costs a bit more, it is much more flexible and much more easy to pull on a run with many bends. The manageability of stranded wire is usually worth the few extra pennies it cost.s

The final characteristic of a wire that affects its ability to conduct electrons is its length. In short, the longer the line the higher the resistance. In long runs of wire it is often necessary to increase the size of the wire to compensate for the resistance of the smaller wire. Length is more critical for wires transmitting signals, such as CCTV and alarm and access control panels. Obvious symptoms of a run that is too long at a given wire gage is a power loss or voltage drop of more than three percent.

While running the correct gage wire is the ideal solution for any wiring requirement, a nice rule of thumb is that by joining or running two wires of the same gage in parallel, the resistance value of the line jumps up by two gages. For example, if we run a pair of 22 AWG wire and connect the ends of the lines so they are running in parallel; the resistance of that single line jumps up past the next 20 AWG and is approximately equal to a 18 AWG line. *(See illustration 5.)*

In running any length of cable, however, there is always a loss of power due to resistance from the wire. An anticipated small voltage drop should be of little concern because most equipment is made to operate within a close range of voltages. A 12 volt device will safely operate between10.5 to 13.5 volts, for instance. In fact, in order for an electro-mechanical device to receive Underwriter Laboratories approval, it must be fully functional at 85 percent voltage. Therefore, a 12 volt electric strike, for example, must operate at voltages as low as 10.2 volts, well within a three percent drop of 12 volts.

Most manufacturers provide charts for determining the proper wire specifications for their equipment. If

there are long distances involved or the manufacturer's chart does not include the distance of your run, either contact the manufacturer for specific gage information or follow the following formula: CM=CKLI/VD.

C = the number of conductors or wires. K = a constant dependent on the material of the wire. Copper is valued at 10, aluminum at 20. L = the length of the run in feet. I = the current requirements. VD = the three percent voltage drop.

AWG Number	Diameter	Circular Mils	Resistance in Ohms per 1000'
0000	460.0	212,000.0	0.0500
000	410.0	168,000.0	.0630
00	365.0	133,000.0	.0795
0	325.0	106,000.0	.100
1	289.0	83,700.0	.126
2	258.0	66,400.0	.159
3	229.0	52,600.0	.201
4	204.0	41,700.0	.253
5	182.0	33,100.0	.319
6	162.0	26,300.0	.403
7	144.0	20,800.0	.508
8	128.0	16,500.0	.641
9	114.0	13,100.0	.808
10	102.0	10,400.0	1.02
11	91.0	8,230.0	1.28
12	81.0	6,530.0	1.62
13	72.0	5,180.0	2.04
14	64.0	4,110.0	2.58
15	57.0	3,260.0	3.25
16	51.0	2,580.0	4.09
17	45.0	2,050.0	5.16
18	40.0	1,620.0	6.51
19	36.0	1,290.0	8.21
20	32.0	1,020.0	10.4
21	28.5	810.0	13.1
22	25.3	642.0	16.5
23	22.6	509.0	20.8
24	20.1	404.0	26.2
25	17.9	320.0	33.0
26	15.9	254.0	41.6
27	14.2	202.0	52.5
28	12.6	160.0	66.2
29	11.3	127.0	83.4
30	10.0	101.0	105.0
31	8.9	79.7	133.0
32	8.0	63.2	167.0
33	7.1	50.1	211.0
34	6.3	39.8	266.0
35	5.6	31.5	335.0
36	5.0	25.0	423.0
37	4.5	19.8	533.0
38	4.0	15.7	673.0
39	3.5	12.5	848.0
40	3.1	9.9	1,070.0

(*Basic Electricity*, Dover Publications, NY, 1962)

4. Using the American Wire Gage system, the higher the number the thinner the wire. While every gage is subsequently listed here, most companies supply the even numbered gages, skipping the odd gage numbers.

CM = Circular Mil.

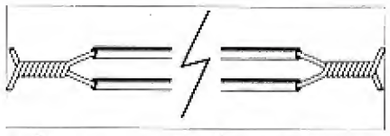
Let's take an example. We are installing a 24 volt strike on a warehouse door. The strike has a .37 amp current draw. The distance of the wire run (including going up walls and through ceilings, etc.) is 250'. The wire is two conductor and made of copper.

Plugging this into the formula we have: C = 2 conductors. K = 10, the constant used for copper. L = 250' of wire. I = .37 the required current. VD = .72, voltage drop of 3 percent.

CM = 2(10)(250)(.37)/.72

CM = 2569.44

Having figured for CM, we now use this figure against Table Four. Locate



5. Placing two wires of the same gage in parallel, decreases the resistance of the line by two gages. If each wire in this illustration is 22 AWG, placing them in parallel effectively yields an 18 AWG line.

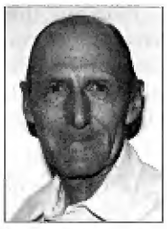
the Circular Mil column and follow it down till the number closest to our answer is found. If the answer is in between two numbers, go to the highest number. Go across to the AWG column and that is the wire needed.

For our example, 2569.44 falls between 2050 (17AWG) and 2580 (16AWG). Choosing the higher of these two numbers, 2580, means the minimum wire size we should use is 16AWG.

In completing this article, the above formula and chart, as well as all the other power and wire specifications one needs to know can be found in the National Electrical Code book. For anyone involved in doing alarm or access control work, this manual, as well as taking courses on electrical installation, is recommended. Next month we will cover the physical requirements of the wire.

BEGINNER'S CORNER

Tryout Keys



by
Eugene Gentry

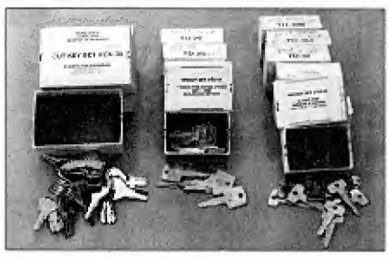
Is there a place for tryout keys in a shop or service truck? Tryout keys are a valuable asset for a locksmith business, as they help in lock openings or to fit a key to a lock when other methods are too slow or impractical. Some locksmiths think that tryout keys are less than professionals, however time is money. The less time its takes to do a job, the more money you make.

A tryout key is one that is cut to special non-original dimensions. It takes advantage of the wide tolerances in many types of locks so that each tryout key can work in two or more different locks. The keys are useful to use on any lock that cannot be picked, impressioned, or disassembled. Another use is at night when impression marks are difficult to see. *(See photograph 1.)*

1. Tryout keys can be a good, fast alternative to other methods of opening and key generation.

You can also use the tryout key as a basis for making an original key. If you find a tryout key that works in a lock that cannot be disassembled, then you would know the approximate depths of the cuts. On a code machine, or by impressioning, you can then make a key to the correct bitting or cuts.

Aero Lock Company manufactures a complete set of tryout keys. They have domestic and foreign auto sets, motorcycle sets, utility, file, desk and cabinet key sets. They also offer cut key sets. These are actual working keys, cut to the original factory dimensions for each lock series.



2. Aero motorcycle tryout keys.

I have had a chance to use a number of these tryout key sets, and have had good luck with them. One call was to make a key for a Kawasaki motorcycle. A lady had to move her son's cycle from an illegal parking area. She could not get in contact with the son to get a key, and she did not know what year or make it was. It was an older cycle, but I could not tell what year it was made.

I used Aero set #TO-33, key number KA14 or X103. The 32 keys are cut different on each side so there are 64 total possible combinations. I tried about 18 keys before finding one that worked perfect in the ignition. After the cycle was moved, the lady did not want a key made. A key could have been made by duplicating the good side of the tryout key. *(See photograph 2.)*

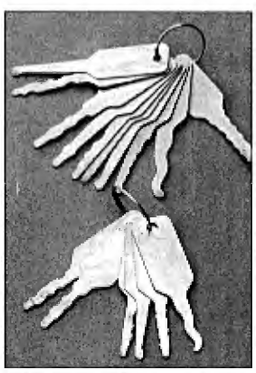
On another occasion, a key had to be made for a file cabinet, make and keyway unknown. I used the Aero set #TO-19, Ilco keyblank 1098M, and within six tries had a key that worked. With some fine tuning through impressioning, a new key was made as good as the original.

I did some experimenting with the Chrysler set of 160 keys. On one vehicle, I used all the keys without finding one that worked. Then I tried them again and found one after about 25 tries. The first time I must have missed one of the keys.

The Honda and Datsun keys work good, but I haven't had a chance to do much with the Ford keys. A locksmith friend of mine took the Ford 10 wafer key set to try on some fleet trucks, and didn't have any luck.

Although the catalog has a note that the GM key sets are not as reliable as the other sets, because of the sidebar lock, I have had very good luck with them. I have used them on a couple of Chevrolet trunks, several doors, and on four ignitions. By measuring, or reading the depth of the cuts on the tryout key, you will see which of the depths is a 1/2 cut. Then on a code machine you can make an original key, or by duplicating, and cutting the one depth high or one depth low you will have original dimensions.

There is another type of tryout key set that is not made from key blanks and are commonly referred to as rocker picks. Septon Inc. makes two sets of this type of tryout key. One set has 10 keys for use on car doors or ignitions, and the other set includes six keys that are used for gas caps, glove boxes, padlocks, and other types of locks. *(See photograph 3.)*



3. Septon Inc. rocker picks.

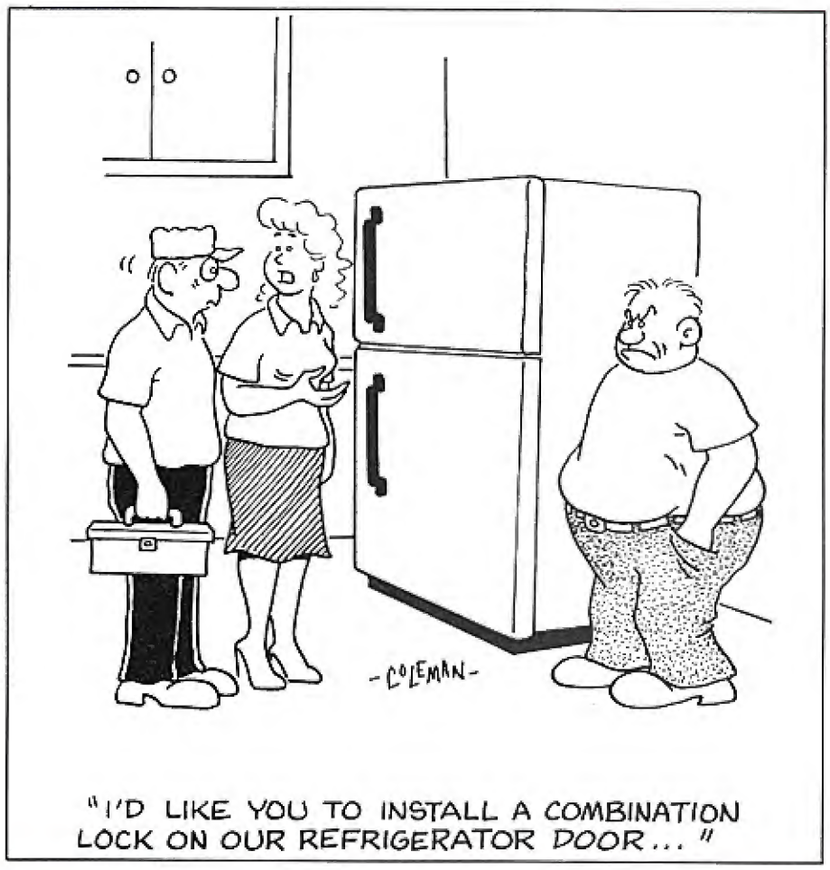
These keys are made of strong, flat steel with simulated depth cuts. They work good for openings, but

probably should be classified as pick keys rather than tryout keys. To operate, the key is tried in the keyway. If it fits, it is used more like a pick than a key. The key is rocked up and down while applying turning pressure. The key may also be worked in a raking motion, with turning pressure.

The cuts are different on each side of the key, so if one side does not work, turn it over and try the other side. I have used these tryout keys on both foreign and domestic autos. They work well for openings and the smaller set works on padlocks and some cam locks. It is difficult to use these as a pattern for an original key. You might be able judge some of the depths along with impressioning to make a key.

The steel tryout keys from Septon, Inc. are priced at $33.95. The prices for the Aero Lock tryout keys vary for each set.

For information on the tryout keys write Aero Lock, P.O. Box 16434, Memphis, TN 381886-0434, phone 800-627-9433; and Septon, Inc. P.O. Box 9, Malden-On-Hudson, N.Y. 12453, phone 800-537-8752.



"I'D LIKE YOU TO INSTALL A COMBINATION LOCK ON OUR REFRIGERATOR DOOR..."

Cover Feature

INSTALLING SECURITRON'S DK–25P

"Every now and again a 'New and Improved' product comes along that's not only austhetically better looking, but has truly been redesigned."

If you'll take a closer look at my photograph to the right, you'll notice that I'm now sporting a coat and necktie rather than my normal polo-type shirt. Before you conclude that I have become a Beau Brummell or a glittering nabob of sartorial splendor, I want to put such foolish notions to rest. I detest wearing neckties and think that a fellow should only have to wear a coat, of any kind, when he is cold.

by
Jake Jakubuwski

Unfortunately, there are occasions when circumstances force me to wear my Sunday-go-to-meetin' clothes. When one such occasion arose recently, Christie drug (I know, it should be "dragged") me off to a photographer friend of ours before I could get home and "shuck" my suit. The above picture is the result of what was, maybe, the third encounter that I've had with a professional photographer in my life.

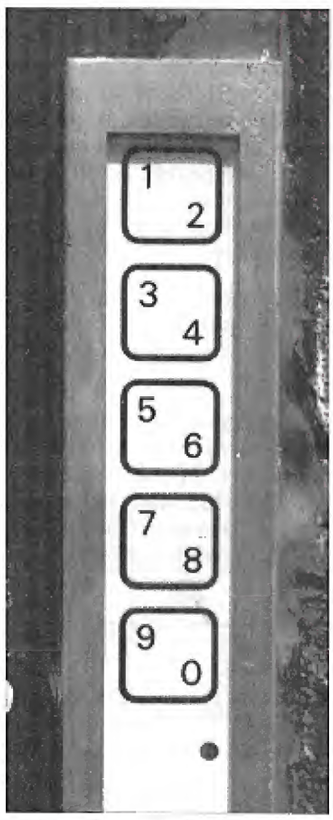
1. The new and improved DK-25P by Securitron.

The next thing I know, the new photo is sent off to *The National Locksmith* to grace it's pages, and I have to listen to a ration of ribbing from Marc Goldberg and Tom Scroogy about me gettin' "Hi-Tone" since I was given the Technitips column to edit. That's not true either. You might now have a photograph of Jake Jakubuwski in a coat and tie, but the coat and tie don't change the basic product. It's still me, of the polo shirt preference, that's lookin' back at ya'.

Anyway, the whole episode with the photograph got me to thinking about the fact that a lot of companies have, over the years, introduced "New and Improved" products that are really no different from the older product. It's just that they've been repackaged in a more eye-catching manner. Or, maybe the shell or casing was redesigned. That's called merchandising, and merchandising is practiced every day of every week by manufacturers of everything from licorice sticks to locksets.

Then, every now and again, a "New and Improved" product comes along that's not only aesthetically better looking, but has truly been re-designed, re-engineered and completely re-thought. Such a product is Securitron's new DK25P which is being released this month. *(See photograph 1.)* Securitron, for those few of you who may be unfamiliar with the name, is an electronics access firm based in Sparks, Nevada.

3. The DK 20+ after abuse



2. A newly installed DK-20+

Securitron manufactures a variety of electromagnetic (Magnalock) locks, digital access control systems (the DK-20+, DK-30, and now, the DK-25P) plus timers, printers and door logic hardware and the TSB (Touch Sense Bar) exit device. Over the last three years, I have installed a number of DK20+'s with 62 series Magnalocks on high traffic doors (200 plus openings a day) and have found these products to be user friendly, dependable and fairly easy to profitably install.

Unfortunately, with the DK-20+ touch pad there proved to be a fly in the ointment, so to speak. Although these units performed well, the touchpads on the DK20+'s were subject to

premature collapse after prolonged use in high traffic environments. *(See photographs 2 and 3.)* This collapse was caused by a number of abuse factors. People using the door would depress the "buttons" with pencils, nail files, screw drivers, ball-point pens and, for all I know, sledgehammers.

Since the proper operation of the DK-20+ touch pad depended on a membrane contact switch it proved to have a few pitfalls. (A membrane contact switch is a circuit that is "printed" on two chips that are placed in proximity to each other. When the "switch" is pushed the printed contacts come together allowing current to flow. You're probably most familiar with this type of "switch" as the "buttons" on your micro-wave or the "buttons" on copiers or washing machines.)

Although membrane contact switches are practically impervious to "normal" high traffic use, it did not take long for the constant jabbing of the switches with car keys, pencil points and nail files (user abuse) to cause the membrane to break. Once the membrane cracked, it would become permanently closed and the pad would not function.

Now, Securitron never failed to cheerfully replace any of these touch pads for me, but from an installer's standpoint, it was a bit on the inconvenient side to have to re-install a new pad every six months or so. And, one of their earliest attempts to rectify this recurring problem was to install an "extra" Lexan (a tough, high-density, polycarbonate, space-age "plastic") shield over the "buttons." Although this idea worked to a degree, it did not eliminate the problem.

Rather than say, "Hey, this failure is not the product's fault but the result of chronic abuse," Securitron continued to look for a way to make their touch pads as "bulletproof" as possible. And, their engineers went back to their drawing boards determined to find an answer.

The result is the development of the completely re-designed, "new and improved" DK-25P touch pad. In re-designing their touch pad, Securitron took advantage of the fact that membrane switching technology had been steadily improving over the years to the point where today's highly sophisticated products resemble earlier units only in the sense that a Yugo and a Cadillac resemble each other as automobiles.

By upgrading their membrane contact switch specifications to require military-quality membrane switching, Securitron took another step toward "bullet-proofing" their touch pads.

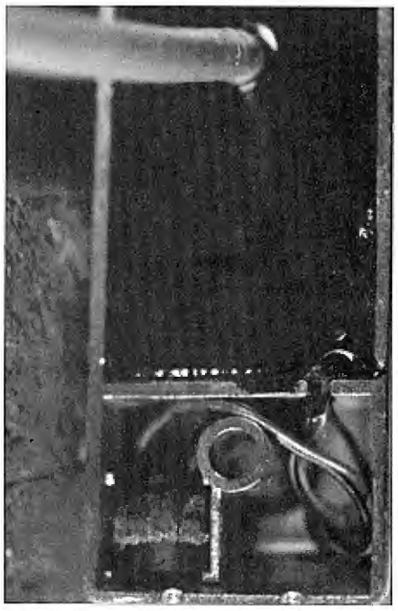
To further enhance the DK-25P's reliability, Securitron buried (literally) the newer membrane contact switches that make the unit function, inside a stainless steel case (that is cast as a one-piece unit) and filled with a two-part, high modulus (rigid) polyurethane which weather-proofs the unit. *(See photograph 4.)* In order to transfer pressure from the outside of the case to the buried switches Securitron decided to use buttons made from a designer rubber known as EPDM. Which might be best described as similar to the same material that 40,000 mile tires are made of. These molded buttons are another defensive mechanism to protect

the membrane from overly aggressive use or abuse.

Securitron's engineers even built protection for the membrane contact switches into the design of these high-density, dimensionally stable, buttons. When molded, these buttons have a 10 mil deep cup molded into their bottoms. The lip of this cup encircles the edge of the membrane switch. Consequently, when the button is pushed (even aggressively or abusively), it has to be depressed 10 mils before it contacts the switch itself. This design virtually eliminates high pressure shock to the membrane contact switch.

These buttons do not actually move in the sense that a mechanical button moves, but by pushing on the button, pressure is applied to the switch element which allows current to flow, and operate the locking mechanism when the proper code sequence has been completed.

I don't recommend this, but because of the density of the EPDM rubber and it's ability to remember it's original configuration, you can push the button on the DK-25P with a screwdriver, or an awl. Although you'll leave an indentation in the rubber, that indentation will later disappear as long as you did not physically cut into it.



4. The backside of the DK-25P shows the polyurethane backing

You might be wondering how come I know so much about the DK-25P if they're only just being released by Securitron this month. I thought you'd never ask. Back last November, I called Securitron and spoke to Mark Hendrickson about the problems I was having with the DK-20+ touchpads I had installed and I wanted to know if there was anything I could do to prolong the life of those pads. Mark told me about the new and improved DK-25P they were working on and then, he made the mistake of telling me they had some prototypes of the DK-25P they were working with.

I begged, pleaded, and finally, literally brow-beat Mark into trading me five DK-25P's for five defunct DK-20+'s. I installed those five, and they looked so good, and performed so well (they have been on very high traffic doors for over six months now), that I wanted to get some more. Unfortunately, Mark said Securitron didn't have any more they could send me until they were released for sale in five or six months. Man, was I disappointed!

But then, Mark made another tactical error. He said that they had a DK-25P and control panel (CPU board) that they were going to install on a test basis. (HO! HO!).

I told Mark (Truly, it was just a coincidence don'tcha know?) that I was just then getting ready to install a DK-20+, a Magnalock and a TSB (Touch Sense Bar) on a single, high traffic door, and he would not find a better test for his unit anywhere, than the installation I was ready to start. He checked with The-Powers-That-Be at Securitron and shipped me the unit (Oh-ho! Lucky me! I had Christmas again in February!). I installed the unit Mark sent me, and have not had one minute's trouble with it.

DK-20+ HOOK UP	DK-25+ HOOK UP
26 - Must Not Be Used	26 - BLACK WIRE
25 - BLUE WIRE	25 - BLUE WIRE
24 - WHITE WIRE	24 - WHITE WIRE
23 - GRAY WIRE	23 - GRAY WIRE
22 - GREEN WIRE	22 - GREEN WIRE
21 - YELLOW WIRE	21 - YELLOW WIRE
20 - ORANGE/PINK WIRE	20 - ORANGE/PINK WIRE
19 - RED WIRE	19 - RED WIRE
18 - BROWN WIRE	18 - BROWN WIRE
17 - BLACK + VIOLET WIRE	17 - VIOLET WIRE

5. Even though the keypad has been redesigned, termination is almost identical. The only change is that the black wire is now connected to terminal 26 instead of sharing terminal 17.

The DK-25P itself consists of a touchpad and a CPU board. It is designed to work as a digital access unit with a variety of electro-mechanical and electro-magnetic locks. Personally, I have never used the unit with any other lock except the Securitron 62 series Magnalock. The keypad is normally surface mounted on the outside of the door and the CPU board is mounted inside the protected area where it is safe from tampering.

Aside from the improvements in the touchpad, there is only one other change in the unit. With the DK-20+ you insert the violet and black wire into terminal 17 on the CPU board. With the DK-25P, the black wire goes to terminal 26 and the violet wire goes to terminal 17. *(See illustration 5.)*

Just how hard are these locks and digital access units to install? Well, if you can read and follow directions, you can (profitably) install them without too much difficulty. And, if you should get into trouble with your installation, Securitron has a great technical support department, with a toll-free number (1-800-MAG-LOCK) to help talk you through your problem.

So, get with me next month, and I'll take you along on a step-by-step installation of a Securitron DK-25P, a 62 Magnalock and a 36" Touch Sense Bar. Complete with photographs.

See ya next month.

Cover Feature

STRIKING PAY DIRT: ELECTRIC STRIKE INSTALLATION

"Installing electric strikes can be a rewarding and profitable business, with the right know-how and tools"

by
Steve Gebbia

An access control device is basically a complicated switch. This is true whether it is a card reader, a keypad, or a biometric scanner. Use of the proper card, correct personal identification number, or verified identification by a scanner completes a circuit which activates an electro-mechanical device to lock or unlock the door. This device can be an electromagnetic lock, an electrically released lockset, or an electric strike. The most common of these is the electric strike.

Electric strikes are available in a variety of sizes to fit different applications. Choosing an appropriate strike involves some advance scouting of the particular door and door frame. The most important consideration is whether the electric strike physically fits your door and frame and properly captures and releases the latchbolt. The following should be considered when selecting an electric strike:

DEPTH OF DOOR FRAME CHANNEL. There must be sufficient depth to allow the strike to physically fit within the frame.

TYPE OF LOCKSET. Exit devices, mortise locks and deadbolts all require specialized electric strikes for proper operation. Also, most applications require a storeroom or classroom function lockset.

LENGTH AND TYPE OF LATCHBOLT. Longer latches and pullman type latches (found on exit devices) require special keepers to properly capture and release the latchbolt. Type of door frame. Most strikes are designed to fit a particular type of frame to accommodate the different mounting methods required by wood, steel and aluminum frames.

VOLTAGE. The strike you choose must be electrically compatible with the rest of your system.

CONTINUOUS OR INTERMITTENT DUTY. If the strike is to be activated for extended periods of time, such as activation by a timer, a continuous duty strike is needed.

FAIL-SAFE OR FAIL-SECURE. Fail-Safe strikes are locked when power is applied and are unlocked when power is interrupted. Fail-Secure strikes are locked when power is interrupted and unlocked when power is applied. Fail-Secure strikes are more commonly used, but you will find applications that require strikes which are reverse-action or Fail-Safe.

OBSTACLES WITHIN DOOR FRAME. Commercial steel frames may have a strike box welded to the frame or may be filled with mortar. This will need to be removed to install the strike.

LOCATION OF WIRE RUNS. This will vary by door and frame, but you should be aware of any obstacles which may interfere with your wire runs.

LATCH GUARDS, ASTRAGALS, ETC. Be aware of anything which projects across the door frame when the door is shut. These may prevent the door from fully closing after the strike is installed.

DOOR CLOSER. A door closer is required to ensure that the door shuts and relatches after each use.

Keep in mind that while electric strikes are available to fit a wide variety of door frames and locking mechanisms, there are situations where an electric strike will not work. For these times, consider an electromagnetic lock or an electrically released lockset.

Commercial Steel Frames

Commercial steel frames present some unique installation problems. The biggest of these is how to cut the material cleanly to end up with a professional installation. There are a number of tools that can be used to cut a steel frame, each with good and bad points.

A reciprocating saw such as a Sawzall cuts very quickly, but can be hard to control, resulting in a jagged edge to your opening. Also, the long travel of the blade often results in the blade hitting the back of the door frame, breaking the blade.

Another method is to carefully drill a series of holes just inside the area to be removed and then connect these holes with a cold chisel. This usually requires a good deal of hand filing to produce a smooth edge to the opening. Besides, it really is not a very professional way to do the job.

A Dremel tool with #409 cut-off wheel is usually the tool of choice for locksmiths who cut steel frames on a regular basis. Although it cuts quickly and is easy to control, the cut-off wheels break easily and wear very quickly. Be sure to bring several with you. Always wear eye protection and insist the same of any spectators. Although I have not yet had the opportunity to try them, Dremel has a new fiberglass reinforced cut-off wheel (#465) which should be longer lasting and less brittle than the model 409 wheels.

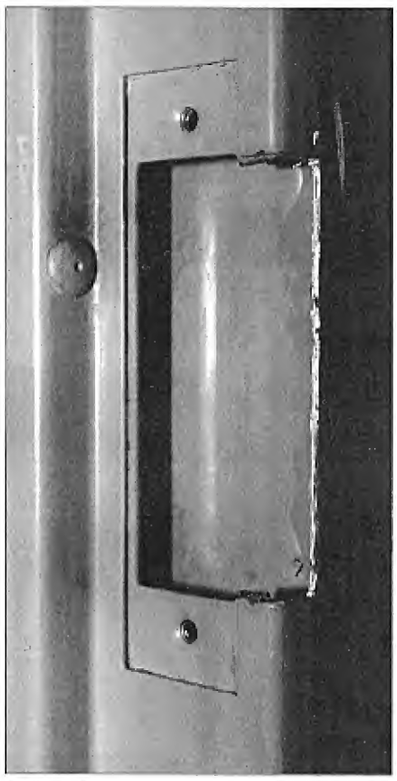
Two other less common tools are a 1/4" electric die

Continued on page 34

Continued from page 32

grinder and the plasma cutter. Similiar to the Dremel tool, the die grinder uses a cutting wheel at high speeds for making the cut, and is more durable and faster cutting than the Dremel. Using 1/32" thick cutting wheel, it is easily managed for most cutting, although clean tight corners may be a little tough. In most cases, minimum filing can take care of the corners and hard to reach areas.

The plasma cutter is an electric, electrode cutting tool that demands some training and practice. It is an expensive tool, and is usually not worth consideration unless handling a high volume of installation work.



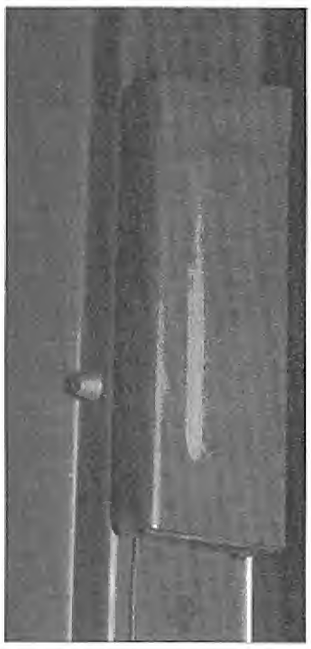
1. The door frame cut to accept the strike.

When dealing with commercial steel frames, there are three basic types of installation. The most common installation involves replacing an existing 4-7/8" strike plate with the electric strike. This allows you to utilize the existing mounting tabs and requires the least amount of cutting to the door frame. Another type of installation involves extending an existing opening to accommodate an electric strike which has a longer face plate than the frame is prepared for. This requires more cutting and the use of mounting tabs to properly secure the strike to the frame. The final type of installation involves cutting a new opening where none currently exists. This not only requires a good deal of cutting, but also demands very accurate measurement and layout of the opening, as well as the use of mounting tabs.

The Installation

After verifying that the strike will fit the frame, mark the side of the frame for the area to be removed to accommodate the return portion of the strike. Carefully cut just within your layout lines. It's better to cut the opening too small than too large - you can always remove more material, but once it's gone, you can't put it back. The material will get hot, so keep a pair of pliers handy to remove the steel as you cut. *(See photograph 1.)*

In most steel frames there is a strike box or pocket that needs to be removed. This can often be the most difficult



2. The strike box as seen from the back of the frame.

part of the job. There are several ways that these are attached.

In photograph two the box is attached at the left side of the opening and tabs of metal are bent over to form the top and bottom of the box. Another common type of box is formed by bending the steel at the ends of the mounting tabs. By examining your frame carefully, you should be able to see where to cut to remove the strike box. When removing material, remember to allow room for an externally mounted solenoid if your strike has one.

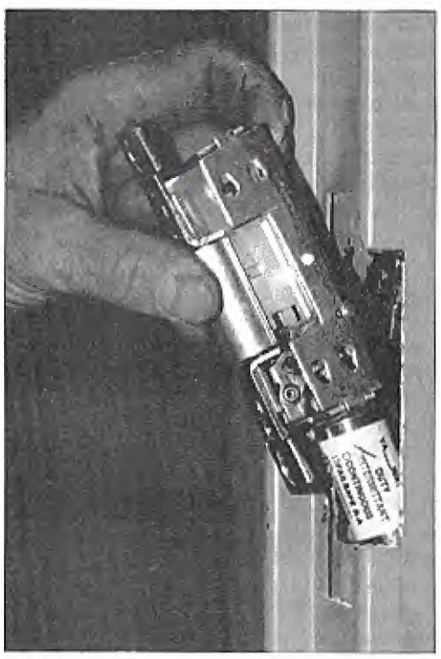
Be careful not to apply too much force to the existing mounting tabs or they will break off and you will need to install your own. It is preferable to use existing tabs as they result in a stronger, cleaner installation.

Frames for exterior doors are often filled with mortar. By using a drill with a masonry bit, you can remove most of the box and mortar. The remainder can be removed with a hammer and cold chisel. Eye protection is a must!

3. Using a hole saw to remove the metal stud behind the frame.

For interior doors, there will be a wood or metal stud within the door frame. A portion of this may need to be removed to allow enough depth for the electric strike to fit. A 1" hole saw works well for this. *(See photograph 3.)* Some of the drywall projecting into the frame will probably need to be removed also. Shave this away using the back of a wood chisel. Be careful not to remove too much or to apply excess pressure as this can damage the drywall and may be visible on the exposed wall near the door frame.

Once all obstacles within the frame are removed, test fit the strike. *(See photograph 4.)* When it seats properly, connect your wires and screw the strike to the mounting tabs. Install the scalp plate, check for proper operation, and you're done.



4. Fitting the strike.

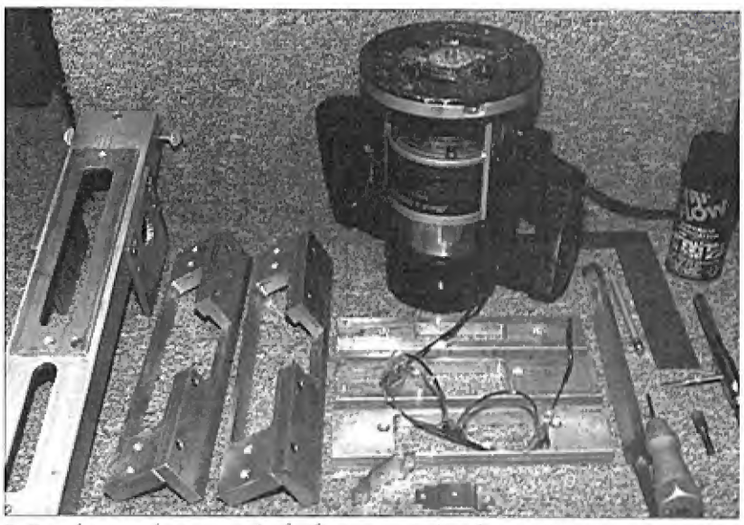
If the scalp plate of your chosen strike is too thick to seat flush, either choose a strike with a thinner, one-piece face plate or bend the mounting tabs inward.

For a new opening where none exists, be sure to position the opening so that the latch will be centered top to bottom and will have enough clearance side to side that the latch will not bind on the strike's keeper.

Aluminum Frames

The easiest and cleanest way to cut aluminum frames is

with a router and template. Several templates are available to allow installation of both standard strike plates and electric strikes. *(See photograph 5.)*



5. Templates and routers make for fast, easy and professional appearing installations.

A few other tools which will come in handy are: a medium grit file, a small machinist's square, a 10-32 tap, a small countersink, and assorted drill bits. A good countersink to use is a single flute design with a 90 degree angle to the tip. This style produces a smoother cut without material build-up.

All cuts with a router should be made in the direction of cutter rotation. Interior cuts should be made in a clockwise direction. Exterior cuts are made in a counter-clockwise direction. This prevents the router bit from 'walking' around the opening, allowing a cleaner cut to be made and extending cutter life. The speed at which you guide the cut is important as well. A smooth, steady motion is best. Incorrect speed will reduce cutter life or cause the cutter to break. In addition to eye protection, a long sleeved shirt should be worn to protect your arms from small, hot pieces of aluminum exiting the router.

If you have an existing MS style deadbolt on the door, you will need to replace this with a deadlatch and install either a lever or paddle release on the inside of the door. Although it is more expensive initially, the paddle release is the best product for high traffic doors since it is sturdier and can be readily repaired.

Before starting, be sure to check that your strike will fit within the frame and that it will completely cover any existing opening.

To replace an Adams Rite MS style bolt with a deadlatch and paddle type release:

1. Remove the inside cylinder or thumbturn and install a cam

plug into this opening. (If it will not insert fully, remove the cam from the rear of the plug, but leave the center gear in place.)

2. Using a small square, mark a line across the door at the height of the spindle centerline.

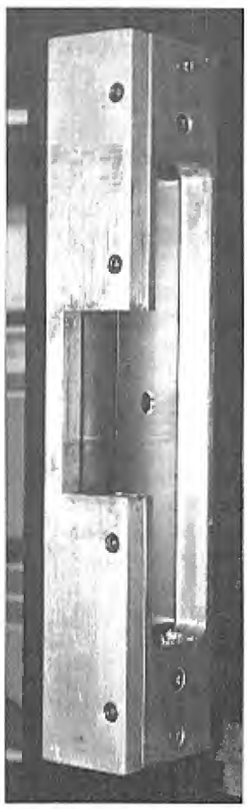
3. Remove the cam plug, outside cylinder and deadbolt lock from the door.

4. Place a line across the door 1-1/2" up and another 1-1/2" down from the spindle centerline. (This is the height for the two mounting holes to be drilled.)

5. Place a mark on each of these lines at the proper backset and drill a 1/4" hole at each mark.

6. Install the binder posts from inside the door using the nuts provided.

7. Install the new deadlatch unit in the door. (Be sure it's the same backset as the original lock.)



6. Attaching the template to the frame.

8. Install the outside cylinder and tighten set screw.

9. Install the cam plug. If necessary reverse the cam for proper handling.

10. Install the paddle base assembly to the binder posts with two machine screws.

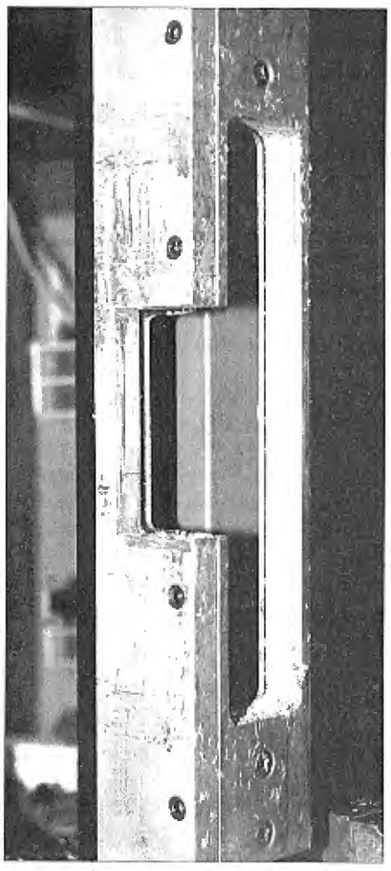
11. Set paddle in base, insert pivot pin and install set screw. Note...the set screw should always be located at the bottom of the base to allow the pivot pin to be removed in the future. Also, the set screw has a hollowed out area which should face up to allow the pivot pin to seat within it.

12. Hold the deadlatch in the retracted position and check for proper operation. The paddle should return briskly without assistance from the deadlatch. If it binds, check to be sure that your paddle assembly is centered at the same backset as your lock. Do not leave the cam plug loose in the door as it may rotate and prevent proper operation of the latch.

When the latch and paddle operate properly, you are ready to install the strike.

Routing The Frame

The most important step to routing an aluminum frame is proper alignment of the template. If the template is installed to the frame at the proper location, everything will work smoothly. However, if it isn't, the latch may not line up with the strike properly or it may bind on the strike's keeper.



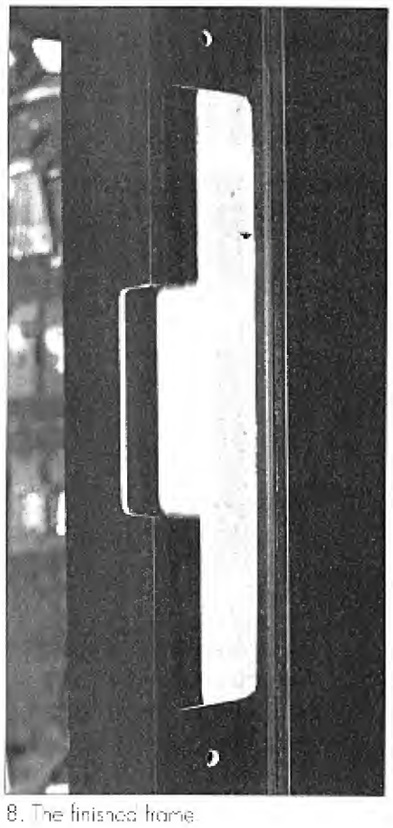
7. Using the router, carefully cut the frame.

The templates have scribe marks to help you align them. Position the proper template on the frame, aligning it vertically with the location of the latch. Mark the four mounting holes for the template. Drill a 9/64" hole at each location and tap each for a 10-32 x 2" machine screw. Screw the template to the frame through these holes. *(See photograph 6.)*

If there is no existing opening, drill a 3/8" starting hole in the middle of the area to be cut. Do not place it too close to the edge, or it will be visible later. An existing opening may be used as a starting hole.

Adjust the cutter so that it extends just past the inside of the surface to be cut. Lubricate the template and the base of the router with a light oil (such as WD-40 or TRI-FLOW) to allow the router to move across the template smoothly.

Start your cut from the center of your starting hole and move the router around the template smoothly in a clockwise direction. Keep the router base tight to the face of the template and the guide bushing tight to the inside edge of the template. Cut one surface of the frame before beginning the other.

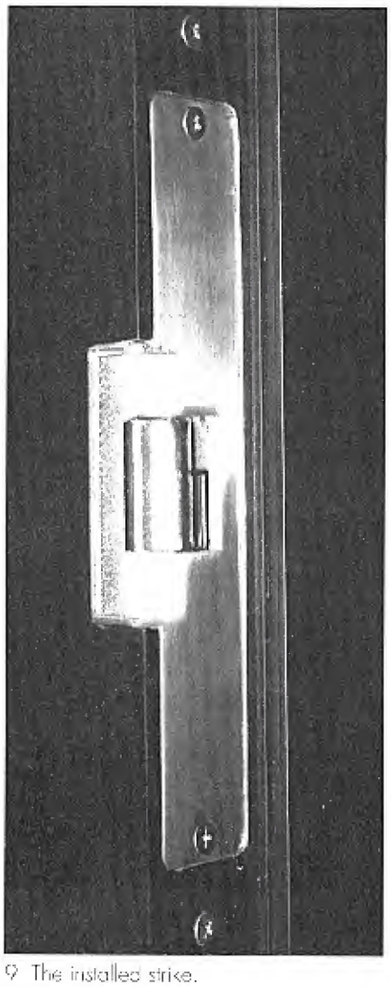


8. The finished frame

Once the cut is complete, let the router come to a complete stop before removing it from the frame. If it is still spinning, the cutter may grab and damage the template, the frame, the cutter, or you. (Photo #7)

Now, remove the template and clean the excess oil from the frame. Clean up any rough edges with a file. You may need to shape the corners of the opening to fit your strike. *(See photograph 8.)*

Enlarge the template mounting holes to 3/16" and countersink. These will be used for the mounting tabs. There are several types of mounting tabs, but the most versatile are the model 'U' tabs. By installing these in different positions, you can allow for face plates of different thicknesses. *(See photograph 9.)*



9. The installed strike.

Special Situations.

Vertical rod exit devices can be released by an electric strike, but there are a few things to keep in mind. The bottom rod and latch must be removed, and the top latch must be a pullman style. This type of latch cannot be held in the unlocked position. Some rim exit devices can be released using a similar strike, but make sure you have clearance between the device and the frame to mount the strike.

This strike is semi-recessed into the top jamb header. Because the face plate sits on the surface of the frame, clearance must be allowed for the thickness of the face plate which can be as much as 3/4" thick. These strikes are heavy-duty burglar-resistant devices with an adjustable faceplate. On some strikes, the keeper is also adjustable.

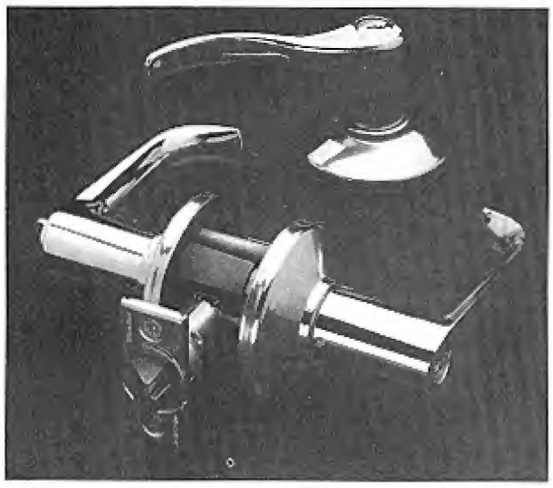
While installing electric strikes in steel and aluminum frames is definitely an involved job, with the right tools and a little practice it can be very rewarding and profitable. Electric strikes are an integral part of most access control systems, and anyone who can install the required hardware will be in demand.

UPGRADE, UP SELL, UP PROFITS

"Consumers are demanding higher quality products and are willing to pay more for quality and style, enabling locksmiths to sell on style as well as functionality."

by Paul Klumpers

Dull as a doorknob is one of those old sayings that has been around for ages. But in fact, given the sudden increase in activity over the past several years, it certainly can't be used to describe our business today.



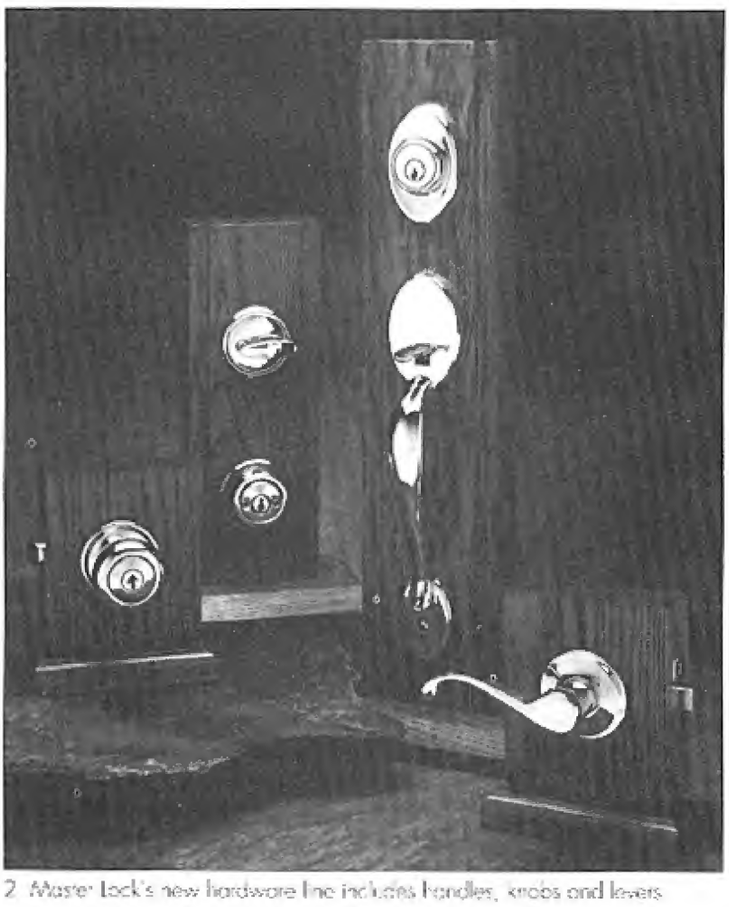
1. Kwikset's Tiror line of heavy duty residential hardware.

The residential hardware industry has historically been slow to change, however manufacturers are starting to wake-up to changing consumer trends. Today, crime prevention is a top priority with consumers, and as a result they are looking for security products that better protect their homes. In addition, the declining real estate market has prompted many homeowners to stay put and upgrade their current homes with better quality, more stylish products rather than try and move up. Subsequently, consumers are driving sales of decorative hardware with the growing popularity of residential handlesets and levers as an alternative to traditional knobs.

Andy Maglio, Action Lock & Key in the Chicago area, states that, "People are definitely looking for something different in residential hardware—something a little out of the ordinary. People looking for decorative hardware are usually more affluent and can afford to upgrade. My experience has been that they want something decorative but good quality too. In response, I carry a wider selection of styles—especially levers and I also offer a good selection of finishes."

In fact, people in the industry agree that consumers are demanding higher quality products and are willing to pay more for quality and style, enabling locksmiths to sell on style as well as functionality. Offering customers higher quality, higher priced products also provide the opportunity to increase profit margins. Selling a customer an upgrade to a stylish front door handleset or key-in lever, can also lead to purchasing hardware throughout the house, offering your customers matching interior hardware.

What all this means is additional business. The net effect of a higher level of activity, awareness, and attention to consumer needs will be increased sales. However, to take maximum advantage of the current situation, the locksmith needs to conduct a product mix review to ensure there is an appropriate mix of product. With the aging U.S. population and the new Americans With Disabilities Act, consumer preference is shifting to levers over knobs.

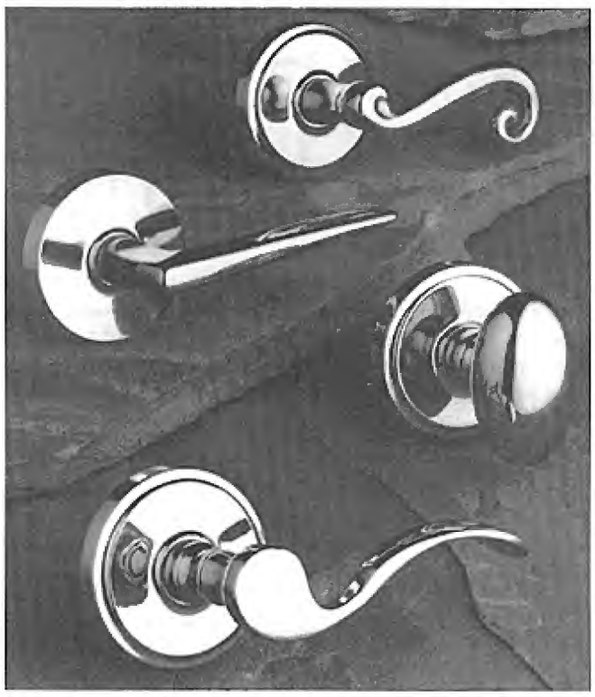


2. Master Lock's new hardware line includes handles, knobs and levers.

Also, merchandising efforts should be reviewed to see if there is a manufacturer's program available that could dress up the shop and help the locksmith better communicate with customers. Furthermore, to

sell effectively requires a high level of product knowledge. Product knowledge combined with a commitment to "sell-up" can result in greater sales and higher profit margins.

Hardware manufacturers have responded to changing consumer trends by introducing a wide range of new products. Over the past two years there has been the introduction of Titan products from Kwikset and a new entry in the category from Master Lock, whose is seeking to leverage the brand identity of its padlock business. Both product lines are focused squarely on the mid price segment of the business, traditionally the stronghold of San Francisco, California-based Schlage.



3. Schlage, too, has many entries in the residential decorative hardware line.

The magnitude of the changes in the hardware business are significant, however it's important to note that

4. Weiser residential decorative hardware.

manufacturers aren't making these moves based on best guesses or wishful thinking. Many manufacturers have conducted consumer research to help them better understand consumer attitudes toward lockset products—what customers want in the products they choose to purchase—and then provide locksmiths with new products or new styles to help better meet customers needs.

Another recent development which will help locksmiths has been the trend of taking product messages to the airwaves. A battle formerly fought in the lockset aisles is showing up on TV screens around the country. The new player, Master Lock, launched a television ad campaign during last year's Super bowl broadcast, one of the hottest ad venues available. In a similar move, Weiser Lock chose to sponsor a major college bowl game. In response, Schlage recently introduced a new television ad program, its first in over seven years, and Kwikset launched it's first-ever national television campaign in support of it's Titan line.

So the strategy is simple: consumers are looking for products that offer quality, durability, security and style and manufacturers have responded with a variety of new products and programs to help locksmiths make the sale. With a little extra effort, everybody wins and increasing your profits certainly isn't dull.

MINI SECTION

Decorative Hardware

The Lifetime Finish From Baldwin

Baldwin is pleased to present a historical product innovation – The Lifetime Finish from Baldwin. This new finish masters the effects of weather, moisture, humidity, sunlight and salt spray. Now, homeowners can be assured that the lock set they purchase today will never lose its bright brass color and radiance.

The beauty of brass has been enjoyed for centuries, but the inherent properties of the metal make it prone to tarnishing when exposed to the environment. Clear lacquers applied

to hardware protect the finish for a time, but they eventually break down when abused by atmospheric conditions, chemical pollutants and surface handling. Baldwin has established a new industry standard for finish durability that eliminates tarnish problems for a lifetime.

Baldwin's patents-pending finishing process incorporates highly evolved vacuum technology with a unique method of finish preparation for solid brass hardware. Bonding semi-precious materials at a molecular level onto the solid brass creates an impenetrable surface. This process is completed in an environmentally controlled room that seals out all potential contaminants. Computerized quality control systems assure a perfect finish every time.

The Lifetime Finish protection has remained unpenetrable to any known hardware test. With exposure of over a thousand hours in salt spray, and simulated weather conditions of heat, UV light and cool moisture, it withstands the test of time while retaining its ageless beauty and luster. And because it is resilient to chemicals, the finish can be maintained simply with glass cleaner and a soft cloth.

All locksets with the Lifetime Finish are warranted for a lifetime against any tarnishing, mechanical and/or material defects. Styles available range from time-honored classics and jewel-like Victorian to the sleek, bold and contemporary.

For more information, please write to Baldwin Hardware Corp. 841 E. Wyomissing Blvd., Reading, PA 19612, or call (215) 777-7811.

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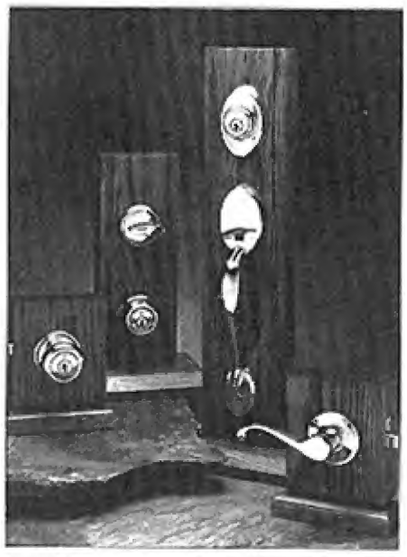
Kwikset Rolls Out Titan Lever Line

Kwikset Corporation, America's largest manufacturer of residential locksets, announces the availability of Titan solid brass levers.

Titan levers are now available in four consumer preferred styles that combine elegance and versatility and compliment a wide range of decorator styles. All are non-handed designs allowing for easy installation on left or right-hand doors. Titan levers offer ANSI Grade 2 performance – the highest residential grade possible and a fifty year warranty. Entry functions utilize Titan Grade 2 exterior knobs



and high security 6-pin cylinders. A special protective shroud is incorporated which provides an anti-pry barrier for extra security. Titan levers also offer screw guides and preset screws to simplify installation.

Titan lever packaging highlights the forged solid brass construction, incorporates Kwikset's color coding system to enable consumers to more easily identify product functions and provides easy, step-by-step installation instructions.

Kwikset introduced the entire Titan line of products including five new knob styles, five solid brass handlesets and two high security deadbolts at last year's National Hardware Show. The Titan program was specifically developed to give Kwikset customers an option to step up to better quality and higher security within the Kwikset family.

New Titan levers are available in the following designs, finishes and functions:

- Designs: Tulane, Hampshire, Madison, Stratton
- Finishes: Polished brass, antique brass
- Functions: Entry, passage, privacy, dummy

For more information contact your Kwikset distributor.

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NT Falcon Lock's New Mortise Lock

NT Falcon Lock, a Newman Tonks company, has introduced its new Laguna-Dunes trim for Grade 1 mortise locks. The ANSI Grade 1 certified trim meets ADA requirements and the needs of high-traffic installations without sacrificing its attractive appearance.

Its ribbed lever and rose and its deep return give the Laguna-Dunes mortise lock a contemporary look. However, it is also ANSI Grade 1 certified.

The Laguna-Dunes is available in all of NT Falcon Lock's regular M Series lock functions in the polished brass (605) finish.

For more information on the Laguna-Dunes or any other NT Falcon Lock product, please call Bob Gilbert at (800) 266-4456.

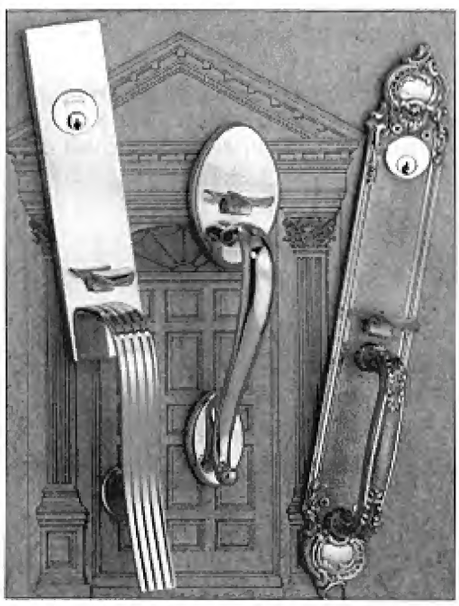
Omnia Line Of Solid Brass Mortise Handlesets

Omnia Industries, Inc. offers solid brass, mortise handlesets, featuring six separate lines—Estate, Waldorf, Regal, Manor, Palazzo and Chateau. Each caters to a different design aesthetic affording a wide range of styles from which to select.

In addition to the main exterior handlesets and featured interior trim selections, Omnia has developed extensive alternatives of compatible interior trim from which to choose. These options provide the perfect accent to any interior, and allow a design theme to be carried from the front entry throughout the home. In all, fifty-one options for interior trim are available, and include both knob and lever types in four different finishes.

Built to withstand heavy use, Omnia's 2-1/2" backset mortise locks combine precision engineering for security and durability with attractive designs worked in solid brass. All of the locks are designed for use with heavy brass knobs or levers, with special springing provided on lever sets.

Schlage "C" keyway is supplied as standard, and stock functions include Single Cylinder, Double Cylinder, and



Panic-Proof, with other functions available on special order.

Omnia Industries manufactures architectural and builders' hardware, including a variety of locksets and trim products, as well as a wide range of specialty items such as hinges, cabinet hardware and bath accessories. Sales are through leading distributors coast to coast.

For more information, please write to Omnia Industries, Inc., Box 330, Cedar Grove, NJ 07009-0330, or call (201) 239-7272.

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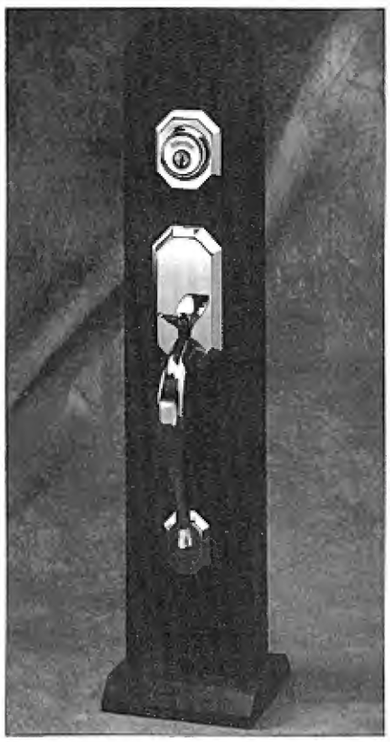
Richmond Handleset By Master Door Hardware

The elegant Richmond is one of three handlesets in the Master Lock high-security line of door hardware.

The Richmond, like all Master



Lock handlesets, features a finish that provides superior resistance to tarnishing, flaking and pitting – Durashine. In addition to its full lifetime mechanical warranty, Master Lock is providing a full 10-year finish warranty.

And the Durashine finish comes standard on the handlesets at no extra cost. These handlesets also feature maximum security; exclusive "hands-free" mounting for quick installation, and keyed-alike convenience.

For more information about Master Lock door hardware, see your local Master Lock distributor, or write to Master Lock Company, P.O. Box 10367, Milwaukee, WI 53210

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Schlage's Mediterranean Collection

Schlage Lock Company features an affordable line of decorative hardware called the Designer Series. Part of a comprehensive Mediterranean Collection of solid brass lever and knob designs, the Designer Series provides upscale, classic looks that complement a wide variety of high-quality homes.

The series consists of three distinctive levers and one graceful knob of cast brass, all buffed to a gleaming finish. One lever design, the "Torino", is also available in bright chrome.

In addition to Torino, lever styles available in the Designer Series are the Milano and Roma; the Siena is the series' knob design.

The Designer Series is available in Passage, Privacy and Dummy Trim functions for interior application and uses a tubular latch mechanism that ensures smooth, effortless operation.

Mediterranean collection designer lock features:

Functions:

MD10S (Designer) – Passage latch. Both levers and knobs always remain unlocked for free access.

MD40S (Designer) – Privacy lock (for bath/bedroom). Button on inside rose assures privacy. Turn the inside lever or knob, or close the door, to release the button and unlock the door. Can be opened from the outside with a small, narrow tool or screwdriver.

Schlage's Mediterranean collection features "Elite" and "Designer" series

MD170 (Designer) – Single

Dummy trim. Surface-mounted for use as a door pull or as matching trim on an inactive door to provide a finished, attractive appearance.

Applications:

Decorative hardware in traditional and contemporary designs, for residential and light commercial interiors.

Standard door preparations: 2-1/8" through bore, 1" edge bore.

Door range: 1-3/8" to 1-3/4".

Backset: 2-3/8" standard. 2-3/4" also available. Specify when ordering.

Faceplate: Square corner only.

Strike sizes: 2-1/4" x 1-3/4". Lip 1-1/8".

Finishes: 605, Bright Brass, clear coated. 625 Bright Chrome, clear coated.

For more information, please write to Schlage Lock Co., 2401 Bayshore Blvd., San Francisco, CA 94134, or call (415) 467-1100.

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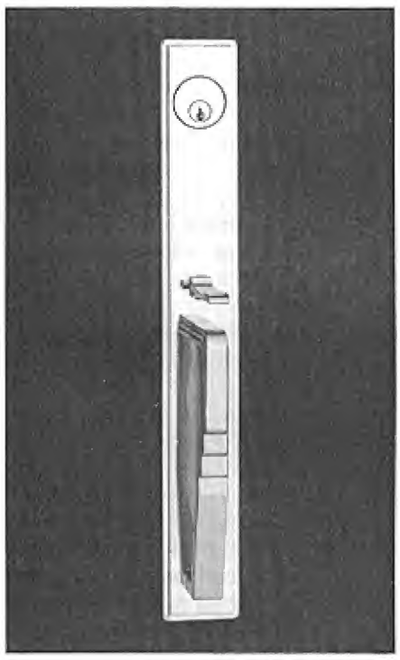
Valli & Valli Handlesets

Valli & Valli, USA announces the introduction of three elegant new handlesets: The Butterfly Series, The Carmen Series and The Boheme Series.

Valli & Valli, USA first introduces its Butterfly Series, expertly crafted by world renowned designer Cini Boeri. An extension of Valli & Valli's popular Fusital line, this Series is forged in solid brass and features a



contemporary European style. The Butterfly Series is protected with a Zirtanio finish that is guaranteed to resist all weather conditions for as long as the buyer owns their home.

The elegant Carmen Series, featuring sleek lines and classic curves, successfully blends the finest European detailing with Valli & Valli's superior craftsmanship. Forged from solid brass, the Carmen Series also offers the protective Zirtanio finish that protects the hardware from even the harshest environmental and weather conditions.

Crafted by world-renowned designer Sottsass Associati, the Boheme Series combines the classic beauty of fine European design with the sophisticated style of contemporary artwork. Seen as the flagship product in Valli & Valli's Fusital Line, the Boheme Series is constructed of the highest quality solid brass and is again protected with the company's Zirtanio finish. These exterior handlesets are equipped with a mortise lock, a selection of interior levers, custom finishes and are also available as dummy functions.

For more information, please write to Valli & Valli, USA, P.O. Box 245, 1540 Highland Avenue, Duarte, California, 91009-0245, or call (800) 423-7161.

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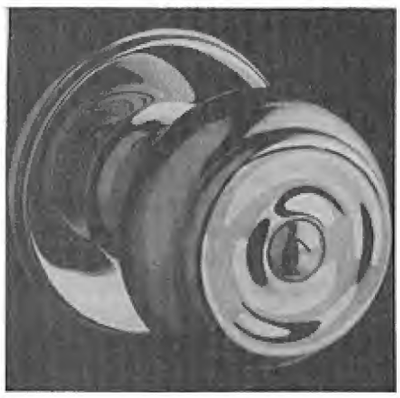
Weiser's Phoenix Knobset

The new versatile Phoenix knobset offers the distinctive look of high end door hardware at a reasonable price and is available exclusively from Weiser Lock. The Phoenix Knobset's unique stylings offer an elegant look for both classical and contemporary styles. The knobset gives homeowners, and builders a unique alternative for decorating or remodeling projects. The knob style is



offered in a number of locking functions suitable for entry, privacy and passage doors throughout the home.

For more information please contact Weiser Lock, 1-800-677-LOCK.

PRISON SECURITY

by Rick Segerstrom

PRISON HINGES

"Prison hinges do more than hold up doors. They're designed for safety and security."

Locksmiths are well aquatinted with hinges. Those small and indispensable pieces of hardware that often generate door problems. Prison situations aren't much different. They have doors and the doors are held up by hinges. These hinges often run into problems and need replacement. Unlike the standard residential and commercial hinge, however, these have some major differences to handle the specialty needs of prison life.

Introducing, the Southern Steel model 204 Institutional Hinge. Now some of you may be wondering what difference a hinge could have. They all hold up a door and allow it to swing freely. Yes! but institutional hinges are different in several ways from the type you may be used to seeing on your average residential house door.

204FM: Full Mortise

204HM: Half Mortise

Size: 4-1/2"X4-1/2"X3/16" (204FM)

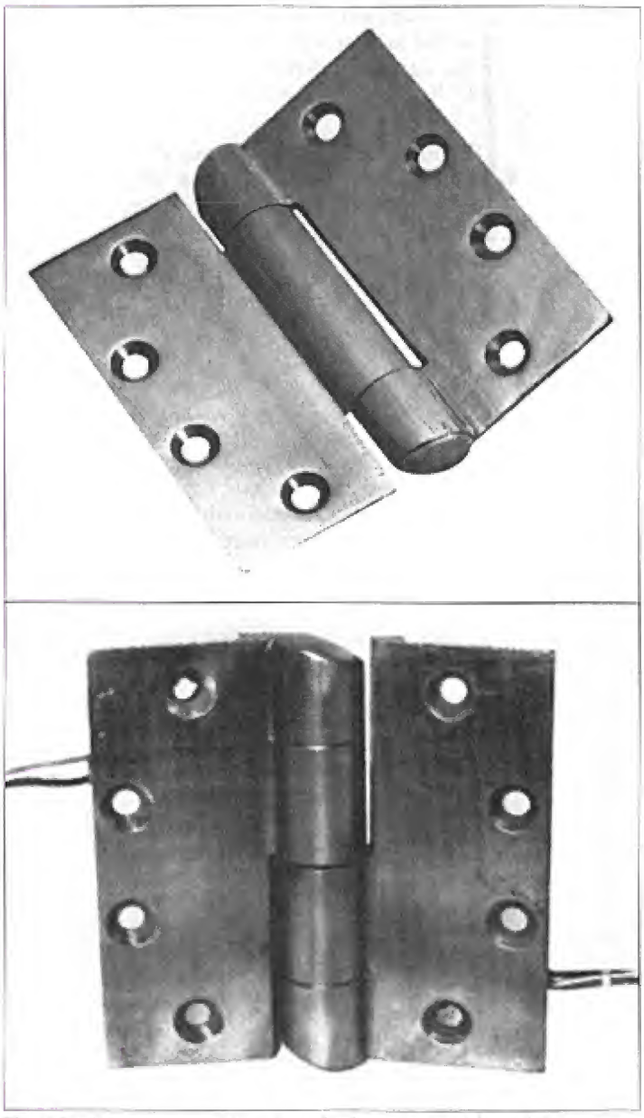
3-3/4"X4-1/2"X3/16" (204FM)

Seems pretty common up to now, right? Well look at these statistics:

Weight: 1.6 POUNDS EACH!

Pin Size: 5/8" diameter! That's as big as your little finger. Now your beginning to see the differences.

The 204 Institutional Hinges are made of cast brass to provide maximum strength and durability as well as outstanding appearance. Each hinge features a stainless steel non-removable pin, plus two sets of hardened steel ball bearings and races. Also, 1/4"X20 brass flat head safety screws are provided with each unit.



The 204 hinge, top, and its electrified counterpart the 204E.

Application: Swinging hollow metal or wood doors. Available in full mortise and half mortise configurations.

Features:

Standard finish: US4 (optional 26D)

Hinge Leaves: Diecast brass

Hinge Pins: Stainless Steel

I want you to notice the tapered ends on this particular device. This is not just for looks, it facilitates a very important function. Since many doors of individual cells swing inward, these hinges are exposed to the prisoner at all times, allowing them the opportunity to use these hinges for purposes other than those for which they were designed.

Even I didn't think of the reason for the rounded tops and bottoms of these hinges until a design engineer working for Southern Steel told me, these rounded edges are intentional. They prevent the inmates from hanging anything from the protruding hinges, including themselves.

Let's move on. The 204E Electric Power Transfer Hinge. Oh you're already ahead of me . Yes, this is the same hinge discussed earlier with five completely concealed and tamperproof Teflon coated conductors. These are available in full mortise configuration only to be used with 204FM Institutional Hinges.

Electrical Data:

One amp capacity, 40 volts maximum.

LIGHTER SIDE

Wally! It's For You

by
Sara Probasco

I guess every business is plagued by telemarketers calling at all hours, trying to sell you everything from light bulbs to insurance. We certainly get our share of these contacts.

Usually, the call begins something like this:

"Is the owner in?"

Now, we learned a long time ago, when someone begins a conversation with those words, s/he is usually preparing to launch either a sales pitch or a lawsuit.

When Don or I answer, our usual response is, "I'm one of them. How can I help you?"

Then, they plunge into razzle-dazzle jive about the weather or how's business, or such, which ultimately leads to the purpose of their call – the sales pitch for their product or service. I'm sure you know, this can take anywhere from a minute or two to ten or fifteen, depending upon the caller and your responses.

Most days, we don't have time for that. Especially when whatever's being sold is something we have no use for.

We have tried various solutions to the problem. A good one is asking, "What are you selling?" right up front. This invariably catches the caller off guard. They usually either sputter denials and hurry into their sales pitch or gasp and hang up. Either way, this shortens the phone time considerably.

Another technique is putting them on hold, assuming your telephone has that capability. If not, simply saying, "Could you hold on a minute?" and laying the phone down will work. Check back every few minutes to see if they're still holding. (They won't, for long. Time is money to the telemarketer. It should be to you, too, although they never seem to consider that possibility.)

Of course, you can simply say, "Whatever you're selling, we're not interested," and hang up, or "disconnect" yourself in mid-sentence. (They almost never call back.) Try telling them it's against company policy to purchase anything over the phone from unsolicited callers. Say you'll be happy to consider their product if they'll mail you some information about it. (They usually won't, but if they do, you can look over when you have time.)

Recently, Don picked up another tip that has proved effective.

"Unhuh, unhuh," I heard him mumbling over the phone one morning. "Well, I'm really not the one you need to talk to," he said.

Listening from my office, which is adjacent to Don's, I braced myself, thinking he was about to turn a complaint over to me.

Then he said, "Wally's your man."

Wally? I'd never heard Don mention anyone by that name, before.

"He handles all our telephone purchases," Don added.

Since when? I thought. I knew Don had been claiming I was "out to lunch" a lot, lately, but surely I hadn't missed out on a whole new employee.

"I'm sorry. He's not in right now. Could you call back in a couple of hours? Just ask for him by name. Right. Wally." Smiling ludicrously, Don hung up the phone. He leaped from his chair, rubbing his hands together in glee. "Ha, ha!" he chortled. "It works." Two-stepping into my office, he announced: "From now on, whenever unsolicited salespersons call, refer them to Wally."

"Wally who?" I asked, still puzzled.

"Who cares? Nobody uses last names any more. Besides, it's just a ruse."

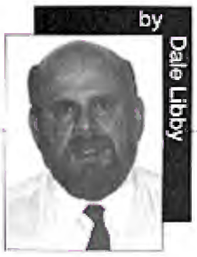
"But, Don," I protested, "what do we say when they call back, asking for this non-existent Wally?"

"Don't you see? That's the beauty of it. Anyone who calls for Wally has to be a salesperson we've already talked to or one of their referrals. We just keep telling them Wally is out. After a while, they'll give up and leave us alone."

Over the next few weeks, Wally got to be a popular figure at the store. Telemarketers would call, sometimes asking for Wally by name, but the calls were kept short, for Wally was never in. Once in a while, the caller would become impatient, wanting to know some way to reach our illusive purchasing agent, but one or the other of us would put them off, clearing the phone line for our customers' calls.

Somewhere along the way, we began to receive junk mail addressed to Wally Al Lockey. No doubt, this was someone's computer interpretation of "Wally, A-l Lock & Key." That's when we knew Wally's name had gotten on some mail/phone lists that were being sold to other marketers.

Continued on page 118



SAFE ABUSE 101

"Possibly the worst type of would–be bungler is that person who has specialized in the art of Safe Abuse."

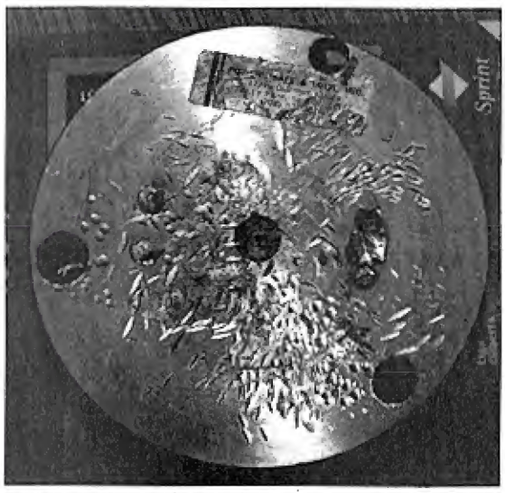
I am sure than many a would-be safecracker fails because of incorrect tools, incorrect information, and a lack of time to do their dirty work. Possibly the worst type of would-be bungler is that person or persons who have specialized in the art of Safe Abuse.

Of course, as we all know, this is not limited to attempted safe openings by incompetent safecrackers, but also by customers themselves. This is especially true in round lift out door floor safes. The customer sees nothing wrong in dropping the head of the safe on to a cement floor every time they open the unit, and give no second thought to the eventual damage and trouble that they will encounter and experience later.

The safe in question here is a Star round door safe with an "E" rating. Both the owners of the fast food chain and the would-be burglars (bunglers) had taken a course in Safe Abuse 101. The story is simple and straight forward. Chop a hole in the ceiling above the bathroom (?), chop a hole in the cinder block wall adjacent to the office, and then spend hours hammering the Star door and outer tube to punish, discipline, chastise, and castigate this dependable floor safe unit.

Photograph one shows the remains of the door after I drilled out the three locking bolts. There are hundreds of hammer marks on and about the door, made by both ends of a ball-peen hammer. There are half moon marks, and pointed depressions about the safe and floor. More, on why I drilled out the locking bolts momentarily.

Before I could decide what to do to the door, I had to get access to the door. The mis-managed bunglers first (as far as I can determine by destruction parameters and blow patterns) beat the edge of the tube of the floor safe inward, blocking the removal of the head, even if it were open. The edge looked like a giant spit ball. This makes no sense to me. If the safe head was unlocked, after this beating, it could not have been removed.



1. Abused Star Safe Head.

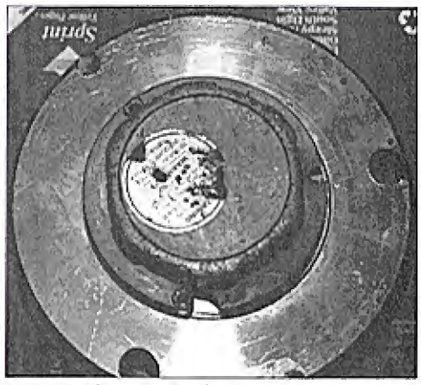
I had to cut the edge of the tube with my floppy disk grinder and beat the edges of the safe tube outward. With the confined area (always a plus) and the greasy atmosphere, this took about 45 minutes. Now on to the safe head itself.

Symptoms. The handle was missing, the removable dial was missing, one of the handle supports was gone, the inner spindle was forge welded to the outer casing of the door and the safe head making the dial spindle impossible to rotate. To make matters worse, the safe head itself was hammered and swaged into the door opening so that the head itself could not be turned without excessive beating, trouncing, and palpitation.

I had to formulate a coherent attack pattern to open this safe with the least amount of work and travail. I made several assumptions

(correct, for once) before I decided to attack this door. Here are my thoughts:

1. With the amount of beating and hammering on the door, and the attempted punching of this rather punch proof spindle, the relocker or relockers had been set off.



2. Back of opened safe showing owner abuse too.

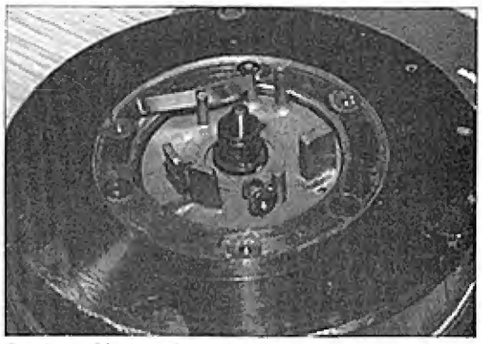
2. The customer would have to have a new or rebuilt door.

3. Time was of the essence.

4. I could not drill into the edge of the safe door through the concrete to punch each bolt back, for the head of the door did not rotate, and I did not want to fix the hole in the floor afterward.

Here is my reasoning:

Since the relockers had been set off, and the dial was immovable, there was no point in trying to drill for the relocker pins. Even if I did remove the pins, the bolts would not move for the wheel pack was still locked and not movable. Since the door would not move, even drilling for the bolts and trying to punch them back, because of the position of the safe and the non-movable head would prevent me from that approach.


3. Abused lower plate and snap ring mis-placement

Likewise, there was no reason to drill for the wheel pack at 41 by 13/16". Hardplate, and a waste of time. Even if you could dial the safe to drop in, the relockers would thwart you in the opening, and you would have to drill for them too. Wasted redundant effort.

I reasoned with justification and motivation that the easiest (?) and fastest attack was to drill for the locking bolts themselves, and drill them off, letting me extract the safe door with minimal effort.

If you can find the dialing index, the first bolt is at 4 from dial center. The other bolts are exactly 120 degrees from this position left and right. Find one bolt, and you have found them all. There are ways to determine exact bolt position by drilling a wire hole at the edge of the door, but this precludes that the safe head can be turned or rotated to exactly locate these positions.

Star heads are standardized, so bolt locations are known. What I thought would be a 15 minute opening took another 45 minutes. Start drilling with a 1/4" drill bit and then enlarge to a 1/2" bit. If your locations are correct the edge of the locking bolt will have been sheared off and fall into the safe. If you are off a little, then your holes will have to be enlarged to 9/16" or larger to accomplish this.

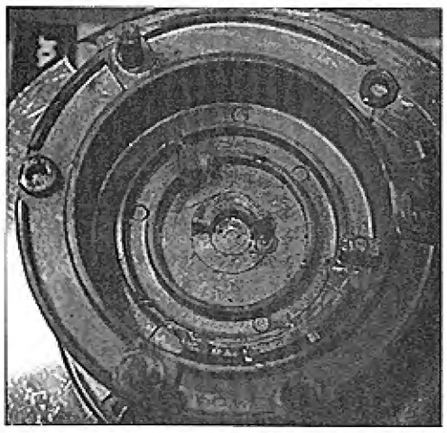
As you can see, only one of my drilled holes was 1/2". The others were a little larger, due to drilling angle and the claustrophobic atmosphere caused by the placement of the safe under a non-movable desk. After drilling, there was a period of prying and banging and swearing until the evasive, baffling, and elusive safe head came off, the worse for wear.

Photograph two shows the back of the opened safe. If you look closely one can see the broken out part of the back cover next to a screw hole located at 6 o'clock as well as the three drilled holes used to drill off the edge of the locking bolts.

What also is apparent in this photo is the abuse the bottom of the safe has taken. The edge of the cover is smashed flat from being dropped and plummeted to the floor after being opened.

Again, both the owners and the would be burglars abused this safe at different times. I was the final molester and ravisher.

Photograph three shows the bottom plate of the safe with the wheel pack removed. It had been moved up enough by the beating to displace the snap ring that holds it on the combination wheel post. Also shown is the break out back cover screw.


4. Inner cover abuse by punching.

Lastly, photograph four shows the inside of the back cover for this Star safe head. Part of the inner broaching has been flattened by the beating. The only thing salvageable on this unit was the hardplate ring. After some custom grinding and hammering, I put in a rebuilt head. I explained the facts about safe abuse and the voiding of any warranties, explicit or implied. Both the customer and I were happy.

Choose your attack on any abused safe depending on what attack is easiest. This choice will entail many alternative ways to meet the challenge. Do not be a tinkerer. Meet moronic and irresponsible force with intelligent energy and power, and You, the Professional will always win (eventually!). OPEN AND PROSPER!!!

THRU THE KEYHOLE

A Peek at Movers & Shakers in the Industry

ATTENTION MANUFACTURERS AND DISTRIBUTORS: Would you like your company and products to be profiled in *Thru The Keyhole*? Please call Managing Editor, Tom Seroogy at (708) 837-2044.

KWIKSET ACCELERATES CONSUMER EDUCATION PROGRAM

Recent polls have put crime at the top of the list of societal issues needing to be addressed. In particular, the fear of residential intrusion is at an all time high. And rightfully so. The FBI reports that a burglary takes place somewhere in the United States every 11 seconds, totaling just under 3 million occurrences a year and $3.8 billion in losses to burglary victims.

While the average loss in a residential burglary is over $1,200, of even more significance is the lost sense of security and increased feeling of vulnerability.

Although there has been a recent and slight decline in residential burglaries, the latest FBI reports on crime show that residential robberies are in fact on the rise, up 19 percent since 1988. This is especially alarming when considering the fact that the FBI's Uniform Crime Reports data forecasts that one out of three households will be burglarized at least once over a period of 20 years.

There is a solution. Many law enforcement and crime prevention groups have reported that the use of simple deterrents can significantly reduce the chances of becoming a victim of this most personal of crimes. In fact, the National Crime Prevention Institute states that simply installing and using good locks on all exterior doors and windows can significantly reduce the chance of being burglarized.

To create public awareness, Kwikset sponsors a national public education program. The focus of the program is simple: To better educate the public about preventive measures that reduce the risk of residential burglary.

"Kwikset has been a supporter of crime prevention efforts on a limited basis in the past, however the introduction of our high security 'Titan' line has prompted us to intensify those efforts," states Bob Shortt, vice president of marketing at Kwikset. "We know from experience that it is good for both the locksmith profession and security product manufacturers to provide consumers with crime prevention information as well as information on security products."

Whether consumers are reached through public service programs or traditional advertising channels, what needs to be accomplished is to increase their interest in replacing or installing new locks. What locksmiths need to do is to better position themselves as security experts and make themselves available to answer consumers' questions and provide them with the home security products and services that they need.

"To demonstrate the public's appetite for home security information, we've received over fourteen thousand requests for copies of our home security booklet from people in almost every state the country. Due to the tremendous public response, we're expanding the program this year, "Shortt states. "We think our public information efforts are a good step toward providing a better understanding of both burglary prevention and the products that are available."

LOCKNETICS' NEW PENTAGON 100 SERIES

Locknetics Security Engineering, an innovator and leader in the production of electromagnetic locking systems, has recently introduced the Pentagon 100 Series – a microprocessor-based system that combines access control and electronic auxiliary locking.

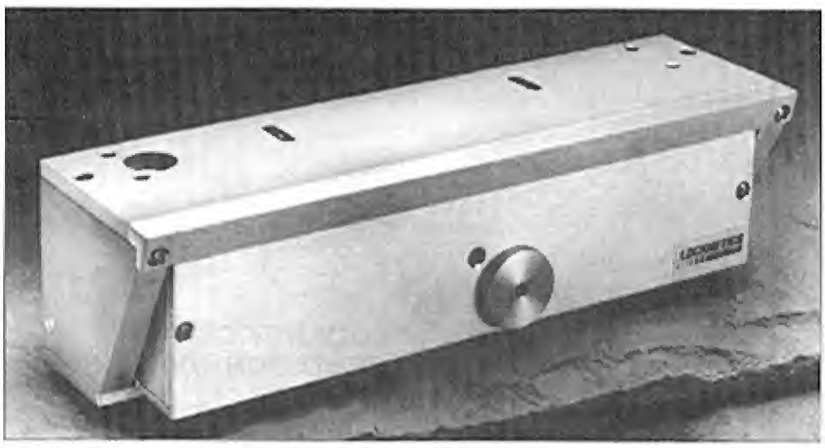
A new generation of five locking devices, the Pentagon 100 Series developed by Locknetics' design engineers, has been created specifically for maximum entry and egress control. Each unit provides onboard logic and microprocessor control interfacing with Locknetics' unique TouchEntry access control reader.

The Pentagon Series features five unique, dependable, and affordable locking systems with 1500 to 1650 pounds holding force. Each model accepts up to two TouchEntry readers for ingress and egress.

101+Delayed Egress Plus has a patented "rocking magnet" sensor to trigger a 15 or 30 second delay; and an onboard TouchEntry reader for reset or legal release adjustable relock delay.

103 Series Defender has the same patented "rocking magnet" with built-in shock absorbers to resist attack from high-impact blows; dynamic load tested.

105 SensorLock features an onboard PIR (passive infrared detector) to provide free egress with no prior knowledge required. The "rocking magnet" provides and alternate egress method and an onboard lighted exit button is provided for redundant backup system. An early warning security



Locknetics Pentagon 100 Series.

alarm audibles with any unauthorized ingress attempt.

107 Modular Delayed Egress is engineered with onboard delayed egress circuitry activated by an external sensor such as the Locknetics 690 SmartBar that triggers a 15 or 30 second delay. An onboard TouchEntry reader is provided for reset or legal release.

109 PowerLock Plus is an electromagnetic lock with a security alarm system and accepts up to two TouchEntry readers for ingress or egress.

All five Locknetics' Pentagon units offer superior integrated design, reduced installation costs, and the versatility to meet security applications in most institutions, corporate facilities, and commercial/industrial buildings. The Pentagon's onboard access control memory stores up to 150 unique user codes. Buffer memory records the most recent 100 transactions for an audit trail record of user, location, date and time, as well as other management selectable audit activities. Retrieve, record and print information with a Computer Interface Pack and a Hewlett Packard 100 LX palmtop or any DOS based laptop. In short, one of these five high security electromagnetic locking systems will provide a virtual custom-fit solution for any security or access control problem.

For more information, call or write Locknetics Security Engineering, 575 Birch Street, Forestville, CT 06010. Phone: (203) 584-9158. Fax: (203) 584-2136.

EMERGENCY ROAD SERVICE

Emergency Road Service, Inc. (ERS), founded in 1983, is one of the largest roadside dispatch organizations in North America. They offer centralized nationwide roadside assistance 24 hours-a-day, 365 days-a-year, on virtually every street, highway, interstate and country lane in the entire United States and Canada. They offer service for every make and style of automobile, van, pickup or light truck, recreational vehicle, motorcycle, and heavy-duty truck.

At the heart ERS is its extensive network of over 12,500 independent service contractors (ISC's). ERS prides itself on the relationship that exists between ERS and ISC's. Their philosophy is to treat their service contractors with the same respect and diligence as those needing service. Our six Regional Managers are strategically located throughout the country, to better serve the needs of our Independent Service Contractors.

NASCAR and SAM'S Club are two of the latest clients to join the ERS family, which includes auto manufacturers such as Isuzu, Mazda, Mitsubishi, and Saturn, motor clubs, including United States Auto Club and their clients (which includes the Ford Motor Company), rental car and cellular companies, and other affinity groups.

ERS uses locksmiths exclusively on all auto manufacturer accounts and dispatches locksmiths on any 1987 or newer vehicle, or on any vehicle with electric locks. They attend locksmith association conventions and are looking to become active in sponsoring industry training at those conventions.

Becoming an Independent Service Provider for ERS is a valuable way to increase your call volume and market your company.

The pioneer of nationwide dispatching, ERS's philosophy of committed professionalism makes it the company to watch for future developments.

For more information call 800-999-1218.

BUSINESS BRIEFS

News from the Locksmithing Industry

INDUSTRY INTERVIEW...

Behind every successful company are the people that make and keep it there. For Master Lock Company of Milwaukee, Wisconsin, one of these people is Tom Smith, Product Manager for Master's commercial/industrial padlock business.

Tom Smith, Master Lock Co.

As Product Manager, Smith is responsible for the profit/loss of Master's commercial and industrial padlock business and is in charge of developing marketing and marketing programs and line extensions to better meet customer needs.

Prior to his employment with Master and before he entered graduate school, Smith worked for a year and a half as a branch manager for a large finance company and was responsible for consumer automobile and household loans.

In 1985 he entered graduate school to pursue a Masters in Business Administration degree. Two and one half years later he graduated and searched for a company to call home.

"I had my choice," said Smith. "I reviewed a lot of companies. I was especially interested in a company that dealt in high quality commercial and retail products. They had to be a reputable company with a good marketing record."

"They had to have a sound management philosophy and a management style of honesty, integrity and open communications compatible to mine," he said. "Master Lock Company fit all the requirements."

With no security experience to this point, Tom quickly learned and adapted.

"It took about 2-1/2 years to build the foundation needed to head the Product Manager position," said Smith. "It took that time to know our product line and understand the security industry."

During this time Smith noted well the changes taking place in security.

"There has been a slow but steady increase in the need for better security," said Smith, "People are looking for better security, especially against rising property crime and vandalism."

"As we progress there will be a continuing need for better and better security," he states, "and following this trend is a move towards incorporating more electronics into security."

Two other directions that Smith sees in the market are increased convenience and quality.

"Greater convenience is important today. There's a strong push for finding easier ways of accomplishing the same task," Smith says. "There is also a greater demand to achieve and maintain a higher level of quality."

For the locksmith, Smith sees knowledge and business skills as two areas that need to be maintained and improved.

"To be competitive, locksmiths are going to have to learn and maintain a thorough knowledge and understanding of state of the art products. They must become the security experts." He said.

"They must also couple this knowledge with good business skills. Many locksmiths are great technically but soft in their business operations. Locksmiths who better poise themselves through proper marketing and a better understanding and implementation of standard management and business practices will prosper in the future."

Focusing in on knowledge and improved business skills, Smith sees the locksmith as being the security professional. The future locksmith will be consulting and recommending a wider range of residential and commercial security avenues for their clients, he said.

As to how a locksmith can better serve the customer, Smith lists six objectives or directives:

"First, identify who your customer is," he says, "know who they are and what they want and need.

"Second, define and maximize your own competitive strengths. Third, stay on top of the industry in terms of product knowledge.

"Fourth, provide your customers with the best quality products on the market. Fifth, provide follow-up service and support to the customer after the sale.

"And, finally, display a professional image in everything you do."

...INDUSTRY NEWS

Medeco Security Locks, Inc. is pleased to announce two new appointments. **Joey Dalessio** has been promoted to Vice President of Sales and **Len Blackwell** has been promoted to Vice President of Marketing.

Prior to his appointment, Dalessio had been the National Sales Manager of the Door Security Division of Medeco Security Locks, Inc.

Joey Dallessio, Medeco Security Locks.

With Blackwell's new assignment, he leaves his position at Medeco as the Vice President of Operations where he directed the manufacturing area for two years.

Charles V. Havil, President and General Manager of ICN Closers.

Charles V. Havill has been appointed President and General Manager of **ICN Closers** effective May 7, 1993. He succeeds Tom Lasier, who elected early retirement after 33 years with the company.

Dave Loughran AHC/CDC has been named marketing manager for The **Dorma Group Inc.** He will be responsible for overall marketing strategies for the Dorma Group companies; Dorma Door Controls Inc. and American Device Manufacturing Company.

Lynn R. Eisenhauer has been promoted to marketing communications manager for the Dorma Group. Eisenhauer will be responsible for coordinating all aspects of the marketing communications program.

Dave Loughran, Marketing Manager, The DORMA Group, Inc.

Lynn R. Eisenhauer, Marketing Communications Manager, The DORMA Group, Inc.

Richard Paladino, Vice President of Corporate Sales of **Alarm Lock** was presented with the first place award in the "Securing America" Awards Ceremony, held at Canastels in New York City. The award, the "Best End user Demonstration Kit", was given in recognition for Alarm Lock's DL2500SKLE Digital Lock Sales Demonstration Key.

Richard Paladino, Vice President of Corporate Sales.

The **Master Locksmith Association of Australia** announces the election of **David A. Stewart** as National President for 1994.

David is the proprietor of A. F. Stewart Locksmiths which serves the community with eleven branches situated throughout Melbourne and regional Geelong, in Victoria. David sees his task as bringing branches and members closer together to ensure the M.L.A.A. is the finest industry organization; and to promote training and the pursuit of excellence to set members apart from their competitors.

David A. Stewart, National President of The Master Locksmiths Association of Australia.

JLM has moved to a new facility located at 3095 Mullins Court Oxford, MI. 48371. This new facility has increased their office space five times and warehouse space three times. With this added space JLM can better serve their customers by increasing staffing levels and by re-arranging the inventory to ship quicker and more accurately. Phone 800-522-2940, new local phone 810-628-6440.

James E. Pokornowski has been promoted to President of **Allsafe Company, Inc.** He takes over the reins from his father, Edwin L. Pokornowski, who announced his retirement in December.

James E. Pokornowski has a Bachelor of Arts degree in Economics from Hamilton College in Clinton, New York. He has worked full-time at Allsafe since 1982, in every department from manufacturing to sales.

Robert J. Pokornowski was promoted to Vice President of Allsafe Company. He has a degree in Graphic Arts from the Rochester Institute of Technology and has been working full-time at Allsafe since 1984.

Stephen W. Miller, President & CEO of Axxess Entry Technologies.

Axxess Entry Technologies, Tempe, Arizona, names Stephen W. Miller as its new President & CEO and member of the Board of Directors. Mr. Miller, 48 succeeds G. Lynn Hagen, who will remain in a Co-Founder capacity, focusing on the marketing area. Miller previously ran Head Sports Inc.'s. American operation.

The **Pacific Locksmith Association,** of Portland, Oregon, elected new officers and directors for 1994-95. They are: President: **Stan Hauer**; First Vice-President: **Ken Mead**; Second Vice-President: **J.J. (Jim) Page**; Secretary-Treasurer: **David Bachman**; Sergeant-at-Arms: **Clyde Williams**; Directors: **Ted Swanson, Larry Carns**, and **Darrell Driver.**

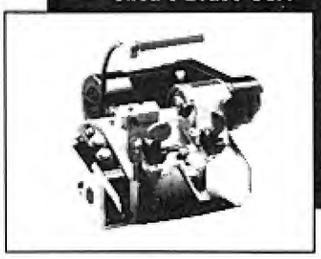
The **Green Mountain Locksmiths Association,** Inc. held elections at its January meeting and the following were elections for the 1994 calendar year:

Directors:	Robert Lindsay
	Cary Marshall Sr.
	Jerry Sklon
President:	Richard Grant
Secretary/Treasurer:	David Keenan

$ $ $ THOUSANDS IN CASH & PRIZES $ $ $

ENTER THE TECHNITIPS 1994 CONTEST

Silca's Bravo USA — FIRST PRIZE

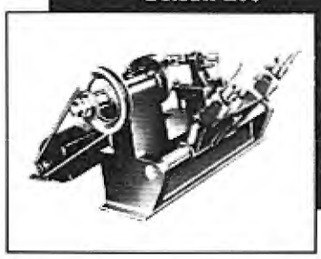


Locksmith designed, the Silca Bravo USA is a quality semi-automatic duplicator. Four-way jaws hold even the smallest keys as this. One of the most accurate key machines on the market.

HPC's Punch Machine™ — SECOND PRIZE

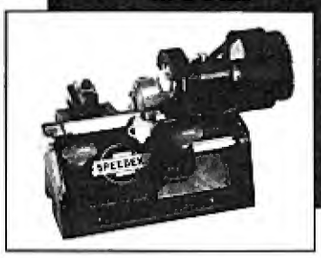
The Punch Machine™ (1200PCH) is HPC's newest addition to the 1200 series key machines. It works on the same principle as the 1200CM, making it quite versatile. It is also very accurate and completely portable.

Belsaw 200 — THIRD PRIZE



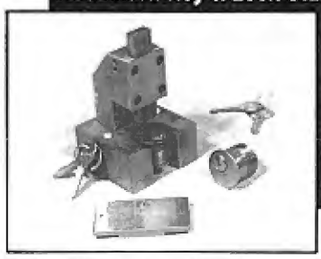
Duplicate, cut by code, cut flat steel keys. Complete machine with motor, three cutters, guides, and instructions. Built in micrometer.

HPC 9120 — FOURTH PRIZE



HPC's most compact key cutting machine features reversible jaws. Double-sided copy dog cuts flat steel and safety deposit keys and has softy brush. Excellent versatile machine.

Accumark Key & Lock Stamp — FIFTH PRIZE



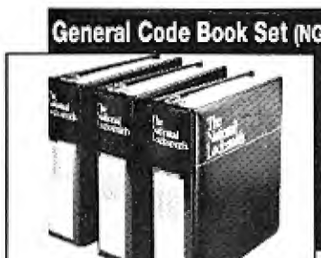
For the easiest and straightest way to coin. The Accumark stamp holder provides accurate stamping of keys and mortise lock faces. Includes holder, mortise cylinder attachment and a custom stamp.

$100 Cash & Flat Rate Manual — SIXTH PRIZE

$100 in cash will brighten your day! So will the *Flat Rate Manual for Locksmiths*. The manual will help you price your services for profits. You won't ever have to guess how to price again.

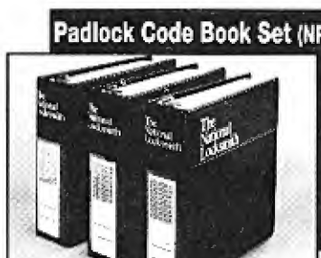
CODE BOOKS FROM The National Locksmith

General Code Book Set (NGCB) — SEVENTH PRIZE



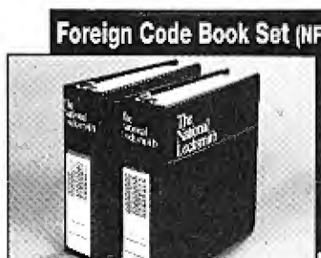
These three books contain 450,000 codes covering domestic lock and automobile codes.

Padlock Code Book Set (NPCB) — EIGHTH PRIZE



These three volumes offer 462,000 codes covering Dudley, American (Junkunc), Master and Yale.

Foreign Code Book Set (NFCB) — NINTH PRIZE



This volume set holds 432,000 codes for the complete variety of foreign codes, from Alpha Romeo to Yugo.

TECHNITIPS

Helpful hints from fellow locksmiths

by Jake Jakubuwski

Send in your tips and win.

HOW TO ENTER

All you need to do is submit a tip, covering any aspect of locksmithing to ***The National Locksmith.***

Certainly, you have a favorite way of doing things that you'd like to share with other locksmiths. Why not write it down and submit it to: *Jake Jakubuwski, Technitips' Editor,* ***The National Locksmith,*** *1533 Burgundy Parkway, Streamwood, IL 60107.*

Tips submitted to other industry publications will not be eligible! So get busy and send in your tips today. You may win cash merchandise, or even one of many key machines or code book sets. At the end of the year, we choose the winners of the listed prizes. Last year dozens of people walked off with money and prizes. Wouldn't you like to be one of the prize winners for 1994? Enter today! It's a lot easier than you think.

EVERY TIP WINS "LOCKSMITH BUCKS!"

Yes, every tip published wins a prize. But remember, you must submit your tip to ***The National Locksmith*** exclusively. Each and every tip published in Technitips wins you $25 in Locksmith Bucks! Use this spendable cash toward the purchase of any books or merchandise from ***The National Locksmith.*** You will also receive a Bonded Locksmith bumper sticker and decal. Plus you will be eligible for really big prizes.

BEST TIP OF THE MONTH

If your tip is chosen as the best tip of the month, you will win $50 in cash as well as $35 in Locksmith Bucks! Plus you will receive a Bonded Locksmith bumper sticker, decal and a Locksmith cap. Plus, you may win one of the annual prizes.

These Prizes Awarded Each Month!

- All-Lock A 7000 VATS Decoder
- HPC Pistolpick
- Silca Rubberhead Keyblanks (100 Blanks)
- ESP PR-13 Professional Lock Pick Set
- Sieveking Products EZ-Pull GM Wheel Puller
- Technitips Handbook

Submit your tip and win!

Tip Of The Month

Homemade VATS Decoder

If you do not have a VATS interrogator to help you generate a first key for that VATS ignition that you are trying to service, here is an easy to assemble tool you might want to make up. You'll need the following materials (most of which can be purchased at hobby and craft shops or industrial supply houses):

1. A VATS ignition with the wafers taken out (uncombinated).
2. One piece of balsa wood, 5/64" thick, by 13/16" wide, and 5/8" high.
3. Two pieces of 1/32" diameter piano wire, by 2-1/2" long.
4. One 1" wide piece of heat shrink tubing cut to a length of 1-3/8".

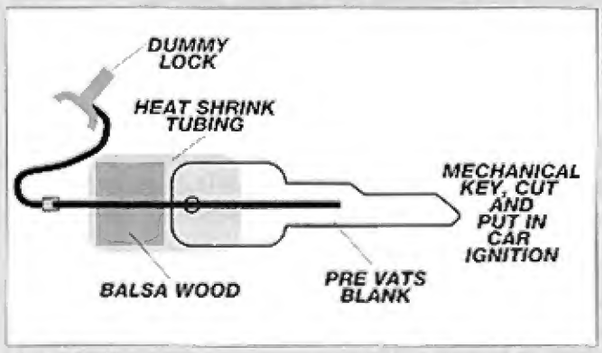


Illustration 1.

First super glue the two pieces of wire to the balsa wood. Glue one piece of wire to each side of the wood parallel to the 5/8" measurement. Leave approximately 5/8" of each wire sticking up from the "top" of the wood (this is to connect the dummy lock to). You should now have about 1-1/4" of wire sticking out beyond the bottom of the wood. (This wire will lay alongside the mechanical key.)

Now slide the piece of heat shrink tube over the balsa wood (leaving the wires at the top exposed) with the excess tubing hanging over the long ends of the wire. Insert a mechanical key (such as Ilco 1098 AV) into this end of the tubing.

Heat the shrink tubing that goes over the balsa wood until it fits very tightly. Lightly heat the tubing that goes on the key blank until it fits just tightly enough to allow you to remove the blank easily. *(See illustration 1.)* Trim off the excess tubing. When you're finished you should be able to easily remove or

insert a key blank into the tubing and between the two long pieces of wire.

To use the tool, simply remove the ignition to determine the code and cut a mechanically correct key on a non-VATS key. Replace the ignition in the housing. Now, before going any further, you must put a small piece of electrical tape the length of the wire on one side of the mechanical key to keep the wire from shorting out against the blank.

Install your mechanically correct key into the tool and into the customer's ignition. Now take your uncombinated VATS ignition and plug it into the two wires that stick out from the top of your tool. Insert your first uncut VATS key blank into your dummy ignition.

Turn the customer's ignition to the start position. If the car starts, cut the VATS blank to the code you found and you're done. If the first VATS key does not work, wait four minutes and try the next key. Continue until you have found the proper resistance code.

Kenneth Schwartz
Florida

ED. NOTE: I think Ken's idea shows a lot of creative thinking and ingenuity. Although VATS decoders are available where you don't have to physically keep track of the waiting time between tries, plus they can perform other functions on the system if you need to do so.

All-Lock VATS Decoder Winner
GM Progression

Although this may be old hat to some of your readers, there are probably a lot of younger locksmiths that will benefit from this tip as it concerns making correct operating key after finding a tryout key that works.

I think tryout keys have their place under certain circumstances (especially with GM sidebar locks). Unfortunately, many people experience difficulty progressing a working key from a tryout key. I have found that the following method (which is just a twist on the GM Progression Method) eases the transition from a working tryout key to a working customer key.

Let's assume that a tryout key with the following bitting works the lock that you are trying to generate a key for: the first cut is a 1-1/2, the second cut is 3-1/2, the third cut and fourth cuts are a 5, the fifth cut is a 3-1/2, and the sixth cut is a 5.

That leaves you with the following possibilities:

Cut number one can be a 1 or a 2.

Cut number two can be a 3 or a 4.

Cut number three is a 5.

Cut number four is a 5.

Cut number five can be a 3 or a 4.

Cut number six is a 5.

Now, on a piece of paper list the possibilities in the following manner:

The possibilities for cuts:

1	2	3	4	5	6 are:
1	3	5	5	3	5 or
1	4	5	5	4	5 or
2	3	5			
2	4	5			

Now eliminate all the combinations that cannot work because they do not "add up" or conform to The Rules of Progression.

Key one is 1 3 5 5 3 5. Possible, it adds to even number (22). Key two is 1 3 5 5 4 5. No! It adds up to an odd number (23). Key three is 1 4 5 5 3 5. No, it exceeds the maximum adjacent cut specification (MACS) of two (1 depth next to a 4 depth). Key four is 1 4 5 5 4 5. No, it also exceeds the MACS. Key five is 2 3 5 5 3 5. No, it adds up to an odd number (23). Key six is 2 3 5 5 4 5. Possible. Key seven is 2 4 5 5 3 5. Possible. Key eight is 2 4 5 5 4 5. No, it adds up to an odd number (25).

As you can see, you now have three possible. Keys 1, 6 and 7. You should be able to easily progress to a working key in two keys by doing the following:

Cut key #1 as follows: 1 3 5 5 3 5. If that does not then re-cut your first key to the following depths: 2 3 5 5 4 5. If those cuts did not work then your next key which will be cut 2 4 5 5 3 5 has to work.

This has worked well for me for many years. I hope it will make someone else's job easier.

Walt Thompson
Georgia

HPC Pistol Pick Winner
Sight Tool

At our shop we make a tool we call a Sight Tool. We use these tools for many things, but primarily we use it to hold down the discs, one disc at a time, in disc-tumbler locks so we can read them. (See Bob Sieveking's article on wafer reading, on page 54 of the November 1992, *The National Locksmith.*)

The source of material for these Sight Tools are old Slim Jim's and band-saw blades of various widths.

Score the material with a carbide tipped machinists scribe or similar tool. *(See illustration 2.)* Then place it in your vise so the scribe line is

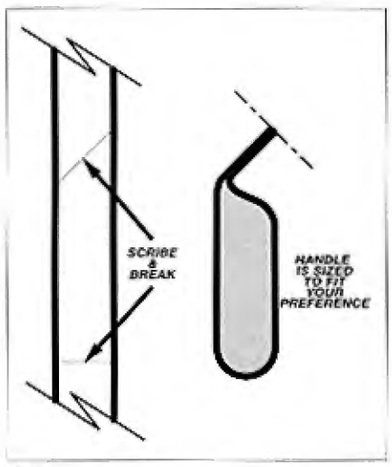


Illustration 2.

parallel with, and at the top edge of, the vise jaws. Wearing safety goggles, strike the exposed material sharply with a two pound hammer. Then, shape the material, with a bench grinder, to the desired configuration. Cool the material often. As the point is formed, work slowly since the heat does not dissipate well.

The Sight Tool can also be used to count the pins in a pin-tumbler lock or to make sure they are all dropping properly. We find that it works well to loosen push-nuts, for pushing knob retainers and depressing the retainer pin on the back of lock cylinders.

Lyn Behm
Utah

Silca Keyblank Winner
Weiser A Lock Aid

I know that you have often heard the expression that a picture is worth a thousand words. Well, I decided to go one step further. Enclosed, you will find a working model of a simple tool

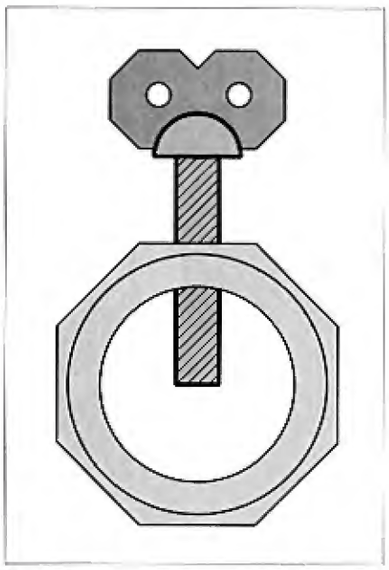


Illustration 3.

that serves as a third hand when servicing a Weiser "A" series entry lock, when no key is available. *(See illustration 3.)*

To use your third hand, slip it over the driver and up against the spindle. Disengage (pull out on) the driver and tighten down the thumb screw. This leaves both hands free to pick the cylinder to the left, then use a hook pick to extract the cylinder.

Service the cylinder in the usual manner. Insert the new key, turn plug left, re-install cylinder in lock, remove the tool from the driver and turn key to the 12 o'clock position. The tool will hold everything in proper time.

The tool consists of one 3/16" nut that was drilled and tapped 10X24, and one 10X24 wing screw.

T. V. Tinker
South Carolina

ESP PR-13 Professional Lock Pick Set Winner

Broken Key Removal

The other day, I was called out to get a broken key out of the ignition of a 1990 Toyota Corolla. It turned out that the tip of the key had broken off and had been forced all the way to the back of the plug. I tried to use my extractors but was unable to bring the key tip forward.

I began removing the lower dash panel from around the ignition housing to see where the retaining pin for the ignition was. I was also thinking that I might have to drill the plug out of the cylinder and replace the whole thing. While I was removing the panel, and dreading the drilling, I thought that maybe I should try to pick the ignition to the "ON" position.

I began raking the wafers (top and bottom since this ignition has bi-directional wafers). It only took a couple of minutes before the plug turned about an eighth of an inch .... and no farther!

After a bit, I remembered that the buzzer arm on these locks was pushed out of the way with the key. I used my rake to lift the buzzer arm, and a small screwdriver to turn the ignition. Then I depressed the retainer and removed the cylinder from the lock.

Once I had the lock out, it took

only a short time to disassemble it and remove the broken key tip, and put everything back together again.

David W. Mets
Michigan

E-Z Pull GM Wheel Puller Winner
Making A Mosler Change Key

How many times have you been out on a job and found that the tool you needed has either been lost or you just didn't have one? Sometimes, a little Yankee Ingenuity can save the day as it did for me when I found I did not have the proper change key to change a safe combination.

I had to change the combination on a Mosler lock and found that I did not have the square cross-section change key for this lock. It turned out that the tailpiece shaft from a used Weiser entry set was the perfect starting point in making my change key for the Mosler lock. The Weiser tailpiece is about 1/8" across each flat, and the length of approximately 4" was perfect for the tool I needed.

On the very end of the tailpiece I filed the square flats to a round shaft, with a total tapered length of about 1/4". Then I began filing the flats until the key slid easily into the keyway (mine required only a few thousandths off each flat).

Once I had the key to where it would bottom out in the lock, I marked the position of the lock cover on the key shaft. The square corners were filed off at this point which allowed my key to be rotated in the cover. A small round file did the trick.

Finally, I bent the end of the key, that would be outside the lock, over at a 90 degree angle, creating a handle for my key. Then I deburred my new change key of the brush of my key machine changed my customers combination and went home.

Bruce Jamisen
Missouri

Technitips Handbook Winner
Mortise Cylinder Advertising

Here are two tips that have made my work easier and more visible to potential customers

First, I have a block of hardwood that is 7-3/4" long, 5-5/8" wide and 1-1/4" thick. I drilled twelve holes with a 1-3/16" hole saw, which is just a large enough hole for a mortise cylinder to fit into. This tote allows me to carry four cylinders (KD) and twelve cylinders KA in pairs.

Now when I go out to re-key a store front, I save a lot of time by simply changing out the cylinders and re-keying the others when I have a chance. I also have another block that is marked "re-key." The cylinders that I take out go in this block, and it keeps them all in one place for me.

My second tip concerns making mortise cylinders work for you by advertising. I have a large block of solid steel which is 4"x13"x4". One end is polished and I use it to hand stamp all of the keys that I carry on the truck with my name and telephone number. On the other end, I had a hole machined out to hold a mortise cylinder only to the shoulder I use this

end to stamp my name and number on all the mortise locks that I carry in my tote.

After stamping my advertising on the cylinders I use paint sticks (red, white and black) that I purchase at the stationary store to rub one of the three colors into the stamped areas of the cylinders. I use a rag with some paint thinner to wipe off the excess. That makes the lettering stand out, and is excellent advertising.

Bill Backus
Florida

Lost Face Plate Screws

When servicing full mortise locks, I seem to find that at least one screw is always missing from the face plate. I have found it difficult to find replacements for these screws.

I've discovered that the new metal/wood combination screws that are provided in the newer locksets work well as a replacement for the lost screws.

Simply cut off the wood thread portion of the combination screw, dress up the cut end with a file, and the remaining part makes an excellent face plate replacement screw. With a daub of the proper color paint, you would think it was an original screw.

Robert Temple,
South Carolina

RFL Driver

Sometimes it is necessary to tap a drive-in bolt or latch into a door, but we all know not to hammer on the extended bolt. It's even harder to tap in a spring latch.

I found that a 19mm socket (I found one at a flea market for a quarter) is just the right size to fit over a latch, or partially extended bolt. It is self-centering and protects the latch or deadbolt from the hammer.

Ted Swirsky
New Jersey

THE COST OF QUALITY

"It happened again! The hardware set is incomplete, with either parts, templates or necessary instructions missing..."

by Paul A. Nee

Every locksmith in America has had this experience:

You're on the last job of what's been a rough day. You're looking forward to finishing this typically easy job and heading home for supper and a little piece and quiet.

All your preliminary door preparation has been completed smoothly and without mishap. Miraculously, the product has arrived on time. You open the box, pull out the door hardware and begin your installation only to be stopped midstream.

It happened again!

•The hardware set is incomplete, with either parts, templates or necessary instructions missing. Or...

•The unit is defective. Once installed it does not operate correctly.

The distributors are closed and local stores don't carry replacements. You flush with anger, slamming the tools back in the box, knowing you'll "have to come back later to finish the job."

Just when you're feeling the most frustrated at the time and money you are losing, you notice the manufacturer's boldly stamped statement on the package promising superior product quality and superior customer service.

Believe it or not, manufacturers are just as upset as you are at scenarios like these. They value their reputation for quality above all else and recognize that every mistake they make threatens that reputation.

In fact, it is difficult to find a hardware manufacturer today that does not make some kind of claim about the quality of their products. The problem is in sorting out those who have actually taken the bull by the horns and addressed the quality problem ... from those who are still just talking about it. How can the locksmith know which is which?

Enter ISO 9000

One possible answer is found in ISO 9000, an international standard that provides an objective measure of the caliber and effectiveness of a company's quality management system. ISO 9000 was approved by the International Organization of Standards in 1987, and has since been adopted by more than 55 of the 91 nations that belong to the organization. The standard's purpose, according to the Grant Thornton Survey of American Manufacturers, is "to determine whether manufacturing plants or service organizations, regardless of national origin, implement sound basic quality procedures."

The initial driving force that has pushed U.S. companies towards ISO 9000 certification was the realization that within five years, certification will be a global business requirement. Those who wish to compete internationally must be certified or they will automatically be locked out of the specifications.

For example, it is expected that every purchase agreement, contract and specification written by European industries, institutions and governments will include a boiler plate requirement that the seller be able to demonstrate ISO 9000 compliance.

Currently many manufacturers whose products are sold only in the U.S. are also working towards ISO 9000 certification. Why? They recognize that certification represents tangible proof of their commitment to quality in all aspects of their business.

It is important to point out that ISO 9000 certification does not in itself guarantee product quality. Product ratings and quality are covered by such standards institutes as American National Standards Institute (ANSI) or Underwriter Laboratories (UL).

What ISO 9000 does do is to certify that an independent team of third-party auditors has done an in-depth review of the company's quality assurance program and determined that it meets the requirements of the standard for a comprehensive, effective quality system. In other words, the quality control program of a company must meet tough, highly regulated, outside, independent standards in order to qualify as an ISO 9000 approved company. In essence, ISO 9000 is a quality assurance check on a company's quality control program.

Just as important, ISO 9000 certification provides a convenient but comprehensive blueprint to follow for companies that are looking for a way to put in place a solid, workable quality-assurance program.

Companies that wish to be ISO 9000 certified must develop an extremely detailed program to ensure that every aspect of their business is conducted according to principals and procedures that result in improved quality for their customers. ISO 9000, in the words of the Grant Thornton Survey, "is a complete review of the manufacturing and customer service processes, addressing everything from how companies design, produce and install their goods to how they inspect, package and market them."

A Major Commitment

ISO 9000 certification requires executive level participation in all aspects of the development and execution of the quality assurance program.

A broad cross section of middle managers must also accept direct responsibility for formulating and implementing quality assurance procedures. The quality assurance program is developed, element by element, and function by function, by a management team that works systematically through each area of the company.

In some cases, this means simply writing down quality assurance procedures that are already in practice. In other cases though, the management team has to carefully analyze the task at hand and develop an entirely new set of procedures to ensure consistent, reliable performance.

Certification is by individual site. If a company has 50 manufacturing facilities each facility must develop its own procedures and have them certified.

This process normally takes from six months to two years or more per site, depending on whether the company must start from scratch in building its quality assurance programs and procedures.

The management team creates procedures that address every aspect of the company. Procedures require indication of who has responsibility for each aspect of the quality assurance program and how training is conducted to ensure that personnel are fully trained, competent and qualified to do their jobs.

Other procedures developed by the management team address the manufacturing process and how it is controlled for quality assurance; how quality control inspections are performed; and how the overall quality assurance system is audited internally to maintain compliance with the standard.

The management team must also establish procedures that set quality standards for vendors of the components and raw materials used in their products, and define how the company ensures that parts and instructions are included when the product is shipped. The standard even addresses procedures for handling customer complaints and change orders.

These individual procedures form the basis for a quality assurance manual. The manual must

demonstrate that the company's overall system meets its own needs for quality assurance while also addressing the requirements that are set forth in the standard.

Developing and writing down these procedures is only the first step. The company must then actually change the way it does business to conform to the dictates of its quality assurance system. And it must develop documentation that proves it is following the quality assurance procedures.

Independent Verification

Any manufacturer can claim it has an effective quality assurance program. ISO 9000 manufacturers have to prove it again and again.

Certification is conducted by independent, third-party registrars, outside firms approved by accreditation organizations which are in turn recognized by the ISO.

Certification begins with a visit by the registrars to the applicant's site for a rigorous assessment of its quality assurance system. The initial assessment can take from five days to as many as 10 days to complete. Over half the applicants fail the first assessment.

Registrars first examine the quality manual and procedures to determine whether or not they reflect the spirit and letter of the standard. They then look at the applicant's records and historical documents for proof that the manual procedures are being followed.

The registrars then go out into the facility and study the work procedures. They talk to machine operators, people in the shipping line and other employees to further verify that the procedures are being followed. They also review inspection reports, training records, etc. If all is in order, the registrar certifies that the applicant's current quality system and manufacturing processes currently meet the standard.

The registrar returns every six months to reassess the quality assurance system. Registrars again review records, inspection reports and other relevant data to be certain that all work procedures continue to adhere to the standard. They also examine any new activities or operations (a production line for a new product, for example) to be sure the operation is in compliance with the standard.

After three years, a complete reassessment is conducted, which closely mirrors the original assessment in time and effort.

Back To The Locksmith

As of April 1992, less than 250 manufacturers in the country in all industries have been ISO 9000 certified. Even today, according to the Grant Thornton Survey, fewer than one percent of mid-sized U.S. manufacturers have been certified.

That brings us back to the locksmith who is trying to sort out the competing claims about quality. We should know that ISO 9000 certification is not a guarantee that the product we are about to open is complete and free from defects.

What ISO 9000 certification does guarantee is that the company which manufactured the product has spent literally thousands of man hours to develop procedures designed to ensure product quality. Those procedures have been reviewed by assessors whose job it is to establish that an effective quality assurance system is in place and capable of meeting the ISO 9000 goal of superior product quality.

In short, the locksmith should know the product comes from a company that does more than just talk about quality.

Dorma Door Controls, Inc. became the first U.S. builders hardware manufacturer (and one of the first 250 companies in the United States) to achieve ISO 9000 registration when its Reamstown, Pa., plant was certified in April of 1992. Paul A. Nee is Manager of Quality at Dorma. He has given many seminars and presentations in the past year on how to plan and implement quality assurance systems, and welcomes inquiries from builders hardware manufacturers interested in more information on ISO 9000 registration.

BITS & PIECES

Informative Tidbits for the Security Industry

by Tom Seroogy

The Allied Locksmith's For Illinois' recent introduction of locksmith licensing, House Bill number HB3687, has been greeted with overwhelming acceptance by state legislatures. To facilitate the bill's acceptance, it was introduced as an anti-crime bill, sponsored by Democratic House Representative Robert "Bugs" Bugielski and co-sponsored by 18 other representatives representing both Republican and Democratic parties.

On April 15th Kathy Zaniolo, President of the Greater Locksmith Association, John Greenan, Legislative Chairman, and Tom Seroogy, legislative committee member, representing Allied Locksmith's For Illinois appeared before the Illinois legislative Rules and Regulations committee where the bill was met with praise and passed unanimously. The second reading of the bill, before the full House assembly, has not been scheduled at the time of this writing. Locksmiths and Allied Locksmith's For Illinois members are encouraged to contact their local House and Senate representative.

Objections have been raised by the alarm industry of Illinois. Wording is currently being worked on to accommodate both the locksmith and alarm trade groups.

For information on the HB3687 or the phone numbers and addresses of district representatives, fax your question or request to 708-366-2094.

New Jersey Locksmiths are breathing a sigh of relief as an alarm bill that would have restricted their right to install electronic access control has been tabled. Several features of the Assembly Bill 836 are restrictive to the locksmith and the locksmith trade. Thus far, the New Jersey alarm industry has snubbed attempts at negotiating for acceptable language. While the alarm industry cites problems within the language of the bill as its reason for being tabled, New Jersey locksmiths' cite their telephone campaign to law makers as the cause. We'll look forward to hearing more from New Jersey.

Tennessee has just passed alarm sponsored House Bill 966 as law. While the alarm industry insists the spirit of the law does not restrict the locksmith from practicing his trade, actual letter of the law does not allow any electronically controlled mechanical device to be installed by a nonlicensed person. By law, then, Detex, Alarm Lock and OSI products and other electro-mechanical locks and products cannot be installed by the locksmith. The locksmiths of Tennessee are currently working on a version of locksmith licensing.

While other states are battling restrictive licensing requirements (most sponsored by the alarm industry), The recent Master Locksmith Association Trade Show in New Jersey was the debut grounds for an important tool for many locksmiths, especially locksmiths dealing with automotive locks.

Aable Locksmith of New York unveiled the new 1994 GM 10-Cut ignition removal tool. The tool allows the locksmith to pick the lock for removal, permitting key generation and replacement of the lock.

To use the tool, a template is used to drill a small access hole through the plastic facecap of the ignition. A sidebar depressing tool (a specially designed tool similar in appearance to a safe change key) is inserted through the hole and over the sidebar.

Placing light turning pressure on the tool, a picking blade (looking similar to a knife) is placed in the keyway and gently rocked up and down. When the sidebar is in the correct position, the sidebar tool rotates slightly, depressing the sidebar into the plug. It's now picked.

Remove the picking blade and, while applying slight turning pressure to the plug, remove the sidebar tool. The plug will now rotate, allowing the retaining button to be depressed for ignition removal.

With the ignition removed, read the code (stamped on the cylinder housing) and make the key.

To repair the hole in the facecap of the lock, black plastic plugs are included in the tool kit. Insert the plug fully into the hole and sand flat with the rest of the cap. Do not cut or shorten the plugs. Besides dressing the hole in the facecap, the plug aligns flush with the back of the facecap, preventing the lock's detent pin from locking up in the drilled hole. If the plugs are not fully inserted or cut short, the detent pin will pop into the hole as the ignition is turned and prevent further turning or use of the lock until repaired.

Once the lock is plugged, replace the ignition and you're on your way!

More and more locksmiths are looking to install auto alarms. So, here's a little bit of information to help both the beginner and the experienced. A training video on auto security can be purchased from the National Academy for Mobile Electronics (NAME) for $49.95. The video is 45 minutes in length and covers the basics for installing alarms. NAME can be contacted at 800-467-6263. Also helping is Excalibur auto alarms at 800-MRALARM. Excalibur is willing to help any locksmith get started with alarm installation. Good Luck!

FIVE TIPS FOR BREAKING INTO ACCESS CONTROL

"When considering access control, those who get past the initial fears and take the time to learn about new technology will reap tremendous rewards."

by Sean DeForrest

Breaking into the field of access control is a big step for any locksmith. Just seeing the sophisticated new products and learning the new jargon can be enough to intimidate even the most industrious professional. However, those who can get past these fears and take the time necessary to learn about the new technology will reap tremendous rewards.

The benefits far outweigh the challenges of entering the field of access control – just look at the statistics. According to the Bureau of Labor Statistics' Outlook 2000 Report, the security field is projected to be the third fastest growing service industry in the United States, with annual growth percentages expected to top 15 percent next year. In addition, annually through the 1990's, Kidder Peabody, a national brokerage firm, reports the growth rate for alarm companies and security manufacturers should top 13 percent, while locksmiths maintain a 10 percent annual growth rate.

What do these figures mean? These statistics point out the tremendous business opportunities for security professionals who take the time to learn about this rapidly growing field. Electronic security products are bringing more sophisticated solutions to security problems which will enable your customers, now more than ever, to develop customized programs designed specifically to suit their individual security needs.

The probability of generating higher profits is another benefit to entering the market. (Remember, profits are not to be confused with higher gross margins.) For example, if a $2,000 electronic access system is sold with a 20 percent margin, the locksmith's gross profit will be approximately $400. On the other hand, if a $60 lockset is sold, with a 30 percent margin, the profit is only $18. The electronic access market clearly represents much larger profit dollar sales.

When you decide the time is right to look at this new field as an opportunity to increase your business, approach it by doing some background research first, just like you would approach any other major decision. The following guidelines may help you in your assessment:

1. Evaluate your professional skills.

First of all, conduct a personal evaluation of your current skills. Have you installed an electrical device before? What level of products are you comfortable installing? Have you taken electronic courses? If not, now is the time to upgrade your skills. Learn the basics of electronics at a trade seminar, local trade school or community college — this background will be invaluable.

2. Learn and understand local and state laws.

Every state has different laws governing the installation of electrical products. Which permits are needed? How can they be obtained? In some states, you will need an electrical contractor license. In others, no specific licenses are necessary. To find out the requirements for your state, call ALOA in Dallas. This group can serve as a valuable resource to you.

3. Learn product applications.

In addition to a basic knowledge of electronics, you need to learn the specific applications for the access control products as well. This is where your sales representatives or wholesale distributor can be very helpful. A few manufacturers and distributors have technical "hotlines" to help you with product applications — learn to use them. Ask questions about the specific security problems each product addresses. Take time to learn the new technology available on the market. Also, attend national trade conventions as well as wholesale distributor shows. In addition, keep abreast of what's happening in the industry by consistently reading the trade journals to find out about new products and technologies.

4. Understand you customer base and identify decision makers.

Since access control products are more complex than traditional locksets and other security devices, the decision-making processes are also more complicated. The higher ticket products typically require authorization of a security department supervisor, instead of solely the purchasing department. Understand how purchases are determined and learn the purchasing processes for each target company.

5. Hone your selling skills.

One of the most important, but most overlooked elements for success in the access control market, is your selling skills. Oftentimes, you will making sales presentations directly to top-level decision makers, so take the time to upgrade your presentation skills. By sharpening your skills, you will appear more polished and confident, which will increase your chances of landing the sale.

The most important point to remember is approach this field like any new product you are looking to carry. Take time to research the market, learn about new products, and upgrade your professional and selling skills. By doing these simple things, you will sharply increase your chances for success and your profits.

Sean DeForrest is president and chief executive officer of American Access Supply, a division of American Lock and Supply, Inc.

DRILL BITS: GETTING THE POINT

"Happily, in many instances, the user can avoid problems simply by practicing proper drill sharpening techniques and using a drill sharpening machine."

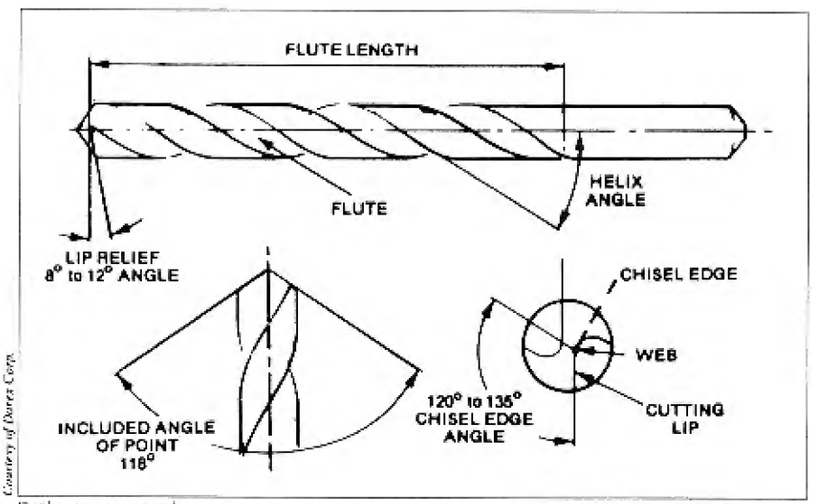
by Curt Anderson

How many drill bits does the average locksmith throw away in a year? Drilling safes, wood doors, metal door, concrete...locksmiths buy hundreds of thousands of bits each year. Wouldn't it be an advantage to get more use out of each drill bit?

The modern twist drill dates back to the U.S. Civil War. Its characteristic helical flutes and chisel-edge cutting point were invented by an enterprising U.S. mechanic named Steven Morse, who in 1864 founded the Morse Twist Drill and Machine Co.

Morse compared his invention to its crude predecessors: "The common drill scrapes the metal to be drilled, while mine cuts the metal and discharges the chips and borings without clogging."

This describes the Morse twist drill in theory. Cold reality tells a different story.



1. Drillpoint nomenclature.

In reality, the process of hole making with twist drills is fairly complex. Illustration one shows the cutting geometry of a typical twist drill. Two different geometries, created by the cutting lips and the chisel edge, form the chip. The cutting action along the lips is like that of a single-point tool, while the chisel edge acts like a negative-rake tool, deforming the material and pushing it outward into the flutes or until the cutting lips cut it. This chisel-edge action accounts for half of the axial-thrust requirement in drilling with a standard web and three-fourths or more of the axial-thrust required by wide-web drills.

While Morse's drill design is ingenious, it is beset by problems, including clogging of flutes, coiling chips, excessive wear, breakage, walking, oversize holes, and burrs at breakthrough.

Sharp Solutions

After reading that litany of maladies, one might yearn for the simpler, pre-Civil-War drills. Happily, in many instances, the user can avoid these problems simply by practicing proper drill sharpening techniques, using a drill sharpening machine.

Let's examine how sharpening can alleviate each of the common problems associated with twist drills.

Flute Clogging

Ideally, chips, as they part from the shear plane, will be small, single-curl cones that exit easily through the flutes. Flute clogging occurs when chips form in coils or large curls, and it is most prevalent when drilling ductile materials or when making deep holes.

Large, curled chips discharge inconsistently through the flutes of conventional twist drills. If any chip curls and crams the exit route, the flute quickly becomes packed. Such clogging increases torque

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requirements, puts extra load on the workpiece and drill, and restricts coolant flow to the cutting edges.

Coiled chips not only clog flutes, but they also wrap around machinery and parts. This is potentially dangerous, and even if the danger is averted, unraveling the coiled chips is a nuisance that halts the drilling operation.

Excessive clearance can cause coiling by generating thicker chips that don't break as they form. An overly aggressive point, or included angle, might also be the culprit, gobbling up material too quickly.

Solution: Certain drillpoint geometries can curb the production of coiled and large curled chips. Conventional drills can be given points that break the drilled material into easily ejected chips. Standard twist drills, properly sharpened with the correct drillpoint angle, relief, and concentricity, should have no problem cutting high-tensile-strength, nonferrous drill sharpening materials while offering a large channel for evacuating chips. For example, a split point exhibits good chipbreaking characteristics when drilling these hard, tough materials.

When drilling ductile materials, one of the best ways to achieve proper chip breaking is to decrease the rake angle of the cutting lips. The resulting chips are thin and fragile. For drills that cut too aggressively, the best solution is to grind the drill to a less acute point angle, for example, changing a point angle from 90 degrees to 140 degrees. This allows the drill to run at a slower feed rate and creates thinner more fragile chips.

Wear and Breakage

Wear begets wear. When a drill dulls, it generates more heat and wears faster. This process begins as soon as a drill is put into operation. Maximum drill wear occurs at the cutting lip. The web, or chiselpoint edge, begins to deform under the heat generated during drilling. The wear at the corners travels back across the lands, resulting in a reduction in the drill's size and life. As a drill wears, its torque and thrust requirements increase.

With accelerated wear, the excessive torque stress breaks the drill. Impeded coolant flow to the cutting edge, the result of flute clogging, also causes drill breakage by allowing excessive heat buildup.

Solution: The rate of wear can be slowed by altering the lip relief. As with any cutting tool, the surface in back of a drill's cutting lips must not rub the workpiece, so it must be relieved to permit edge penetration. Without lip relief, the corner of the cutting lip and the heel arc on approximately the same plane, and rubbing occurs. As a general rule, it's best to increase the relief angle on smaller drills and reduce it on larger drills. With larger drills, which cut more material per revolution, the goal is to limit the amount of load on the cutting lips. The lesser the relief angle, the shallower the cut, hence the lighter the load.

A balance must be struck when grinding lip relief. On the one hand, insufficient lip relief adds to required thrust forces, precipitates lip wear, and generates high heat. On the other hand, too much relief weakens the lips, leading

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to chipping or breakage of the drill. If drill-wear or breakage rates are unacceptable, a simple change of angle in one direction or the other may solve the problem. But before resorting to trial and error, consult a reference source such as *Machinery's Handbook*, the operating instructions for your drill sharpening machine, or the customer service department of the company that sold you the drill sharpener or the drills themselves.

Excessive drill wear resulting from overly aggressive drillpoint angles may be eliminated by lessening the point angle. For example, a stubbier, 135 degree drillpoint has less overall lip length than a 118 degree point. The 135 degree drill encounters less stress and torque.

Finally, S-points are said to last longer than conventional drillpoints. The helical S point exhibits even torque loading and lower thrust requirements. The chisel line on an S-point drill has a cutting rake that slices the material, making for an easier cut.

Walking

The chisel edge, when it meets the workpiece, tends to walk, or pivot from one outside point of the chisel edge to the other. This keeps the drill from biting into the material. Resharpened drills, with their wider chisel edges, are especially susceptible to this problem. One possible solution is to drill a starter hole, but that's additional work, hence, a problem in itself.

Solution: A sharper drill often remedies walking. Sharp drills penetrate more easily and walk less. The split point is a good geometry for alleviating walking because of its self-centering ability. In fact, the split point was developed by aircraft builders to eliminate the walking they encountered when hand drilling aerospace materials.

Oversize Holes

Oversize holes are caused either by a nonconcentric point or by excessive relief. Not only are these holes the wrong size, but they also are inconsistent from one hole to the next. Keeping drills consistently eccentric is impossible; keeping them consistently concentric is merely a challenge.

Solution: One way to meet this challenge is to grind a lesser relief angle. Another solution is to grind a helical or S point, which drills to within standards for oversize allowance published in *Machinery's Handbook*.

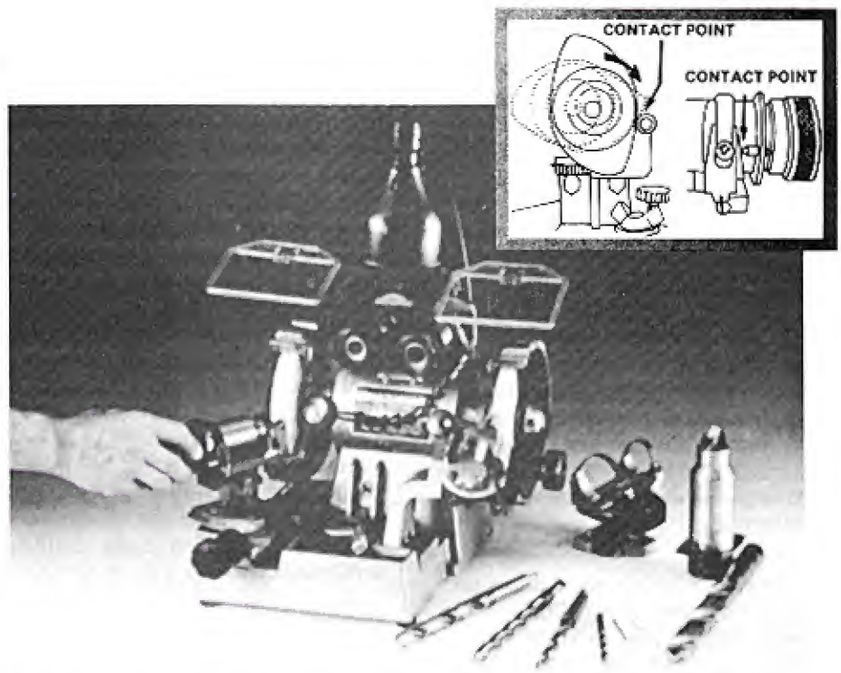
Material Breakthrough

However, helical points occasionally exit irregularly at material breakthrough. The drill overpowers the thin final layers of material as it breaks through, tearing material around the exit. The resultant burrs must then be cleaned in a secondary deburring operation, typically reaming.

Solution: Depending on the work material, various drillpoints are available that can produce burr-free holes in one step. In sheet metal and other thin metal applications such as tubing, a brad point, with its "W" profile, is ideal. In other materials, chamfer the cutting lip, lessen the relief, or create a more acute included angle.

Creating appropriate drill geometries usually calls for a drill-sharpening machine. Granted, there are still some adroit machinists who call create a sharp drill, but they are part of an aging breed that isn't being replaced in the workforce. At any rate, even these seasoned sharpeners cannot be sure the point angle they produce is optimal. Nor can an offhand sharpener guarantee that a sharpened drill will match its predecessor. Such shortcomings are magnified when hand sharpening smaller drills.

Also, hand sharpeners have a limited repertoire – even the best offhand sharpener can't create an S-point drill. For companies that machine a variety of materials, versatility is important, since for every workpiece material there is an appropriate drillpoint. Using a drill having the correct geometry can eliminate costly secondary drilling operations. A good drill-sharpening machine can produce the optimal drillpoint consistently, without guesswork, regardless of drill size. The best advice for shops that still practice offhand drill sharpening would be to get a machine. Let the experienced machinists put their valuable talents to better use, in areas like component design, machining complex parts, and production management.



2. An operator rotates the chuck of this drill sharpener, thereby generating a dual cam action to sharpen both lips of the drill. The dual action is caused by the pins on the wing cam contacting the sharpening fixture's facing cam (inset).

Open or Closed

There are two basic types of drill sharpeners closed-wheel and open-wheel.

The closed-wheel sharpener is a relative newcomer to the market. As the name implies, the operation is enclosed in a housing. These machines are more accurate, faster, and simpler to use than their open-wheel counterparts. Operator control (and error) is minimized. And they keep drill-grinding dust contained, resulting in a cleaner, safer environment for workers and precision equipment. But simplicity and speed come at the expense of versatility — a more versatile machine requires a greater array of setups, which both slows down the sharpening process and makes it more complicated.

Closed-wheel sharpeners are especially popular with high-production shops that use many drill sizes but few point styles. For these shops, minimal downtime, not versatility, is paramount. Down time can be reduced further by using electroplated diamond or CBN wheels, which never need dressing.

Open-wheel drill sharpeners feature an exposed grinding area, which lets the operator put a variety of drill attachments on the machine. With these attachments, an open-wheel sharpener can grind a wide variety of drill styles. One drill sharpener may grind standard point helical points; 60 degree, 90 degree, 118 degree, and 135 degree points; flat-bottom points; split points; chamfered

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points; and many other drillpoint styles, plus parabolic flute drills, step drills, and sheet-metal drills.

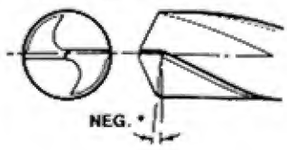
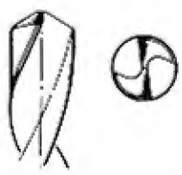
Some machines even sharpen cam-generated points. The drill rotates, while the cam action induces point clearance in the same radial direction as the drill operates in the hole, producing optimal clearance angles. *(See photograph 2.)* Also, when a drillpoint is cam-generated, it sweeps across the grinding-wheel face, so that the wheel requires less frequent dressing.

Generally, open-wheel drill sharpeners are less expensive than their closed-wheel counterparts.

Shopping for Sharpeners

Drill sharpeners vary drastically in price and quality. One manufacturer offers sharpeners ranging from $249 to $2298. But price is only one of many factors to consider when looking for a machine. Ideally, the sharpener you buy should be able to use a variety of grinding wheels for sharpening HSS, 8% cobalt-HSS, and carbide drills.

Trouble-Shooting Guide

PROBLEM	CAUSE	SOLUTION
1. Drill Off-Center 	1. Improper sharpening procedure. 2. Wing-cam pin out of adjustment (if applicable). 3. Excessive dirt or dust in chuck.	1. Reinsert chuck into sharpening fixture and remove a little more material from the high lip. After a little practice, you will find this is not necessary. Just apply light and equal pressure as both edges are ground. Do not attempt to advance drill more than three graduations of feed knob per setting (about 0.005"). 2. If all drills are off-center, it generally indicates that a wing-cam pin needs adjustment. 3. Normally, occasional blowing out with air is all that is required to service dirty chucks. In extreme cases, it may be necessary to disassemble chuck to thoroughly clean—NEVER LUBRICATE CHUCK.
2. Improper Relief 	1. Improper relief setting. 2. Drill not in proper position in relief-setting fixture. 3. Removing too much material off the end of the drill.	1. Arrow on chuck must coincide with point angle on relief-setting fixture. 2. Make sure drill-size arrow is in proper position, drill is always pushed into contact with black dot, and cutting edges rest on pawls. 3. On extremely dull or broken drills, reset drill after initial roughing in. NOTE: A heavy-web drill may require one or two more marks "left" on relief-setting fixture. In extreme cases, consider using the helical or S point.
3. Curved Relief 	1. Attempting to remove too much material off the end of the drill with each feed-knob setting. 2. Cams not held in proper engagement.	1. Only remove 0.003" to 0.005" per each feed-knob setting. 2. Make sure cams are held against contact points.
4. Drill Burning 	1. Rotating drill too slowly. 2. Glazed wheel.	1. Chuck should be rotated quite quickly during sharpening (approx. one full turn per second). Turning too slowly allows friction heat to build up in drill. 2. If grinding wheel appears glazed or slightly shiny, wheel needs redressing. NOTE: Never quench drills in water after grinding, or else checking and cracking of the drillpoint will result.
5. Drilled Hole Oversize or Egg-Shaped 	1. Drill sharpened off-center. 2. Chisel-edge angle too great. 3. Workpiece not clamped. 4. Excessive wear in spindle.	1. See instructions for Problem 1, above. 2. Adjust lip relief on relief-setting fixture to "less" position. 3. Secure workpiece. 4. See drilling-equipment manufacturer's instructions.

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Resinbond, electroplated, or vitrified-bond wheels are recommended. CBN grit is recommended for HSS drills, diamond for carbide drills.

Consider the range of drill sizes and styles you most often use. For example, you may have drills on hand ranging from 1/16" to 2", but the range of drills you typically use may be much narrower. (That's likely – of the 250 million twist drills currently used in the United States, 98 percent are smaller than 3/4".) One drill sharpener handles a range of drills from 1/16" to 3/4" and retails for less than $1000.

Another sharpener covers a range from 1/16" to 2" and costs seven times as much. Are you willing to pay thousands extra to sharpen 2 percent of your drills?

Before buying, beware of these pitfalls:

•Overly complex machines, bedecked with a bewildering array of knobs, dials, and crank wheels. These sharpeners try to do too much, and operating them often takes more time and skill than sharpening drills offhand does.

•Imprecise or unreliable drill sharpeners. Some sharpeners make use of V-block or angle-iron drillholders, which are inherently inaccurate. Other machines make no serious effort to recreate proper drill geometry.

Try before you buy. Operate the machine yourself, either in the showroom or, preferably, in your own toolroom. Demand a 30-day free trial before paying for the machine. This will provide plenty of time for any operational problems to surface.

• Inconvenience. Some machines use a cumbersome collet system. Lost or misplaced collets stop production. And what if a different size, say metric, is needed'? Adjustable chucks are preferable – they handle a full range of sizes, many in infinite increments.

• Expensive, uneconomical machines. Some sharpeners cannot be justified economically. A sharpener should pay for itself in an amount of time that you judge to be reasonable.

If you currently employ a sharpening service, look at your monthly resharpening bill . You'll want a drill sharpener that costs less than two or three years of sharpening-service bills. If you simply buy new drills without resharpening them, calculate the costs the same way. In either case, make sure to factor in the cost of machine tool downtime spent while machines sit idle, waiting for a usable drill. With a good sharpener, this cost can be eliminated.

The most popular drill sharpeners are precise because they're simple. Using these machines, unskilled workers can accurately sharpen drills faster than experienced offhand drill-sharpening masters. Controls should be easy to turn with hand knobs and should feature clearly marked angle degrees. Feed control and alignment should be precise. And normal operating adjustments should be easy to make without the use of wrenches or screwdrivers.

Keeping drills sharpened for peak performance should be a top priority – after all, industry-wide, drills remove more material than any other cutting tool. A quality drill sharpener provides solutions to the serious production impediments posed by inadequate drill geometries.

Curt Anderson is marketing director of Darex Corp., Ashland, OR, a manufacturer of drill sharpening machines. For more information contact Darex at Box 277, Ashland, OR 97520 or call (800) 547-0222.

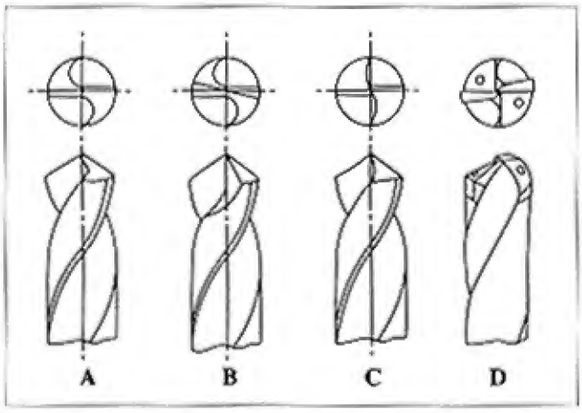
Alternative Geometries

There are three basic solutions to difficulties concerning the twist drill's chisel edge:

1. Split the drillpoint or thin the web. This shortens or eliminates the chisel edge. Splitting or thinning the point has long been used as a way to reduce the size of the chisel edge and reduce or eliminate walking. A point-splitting operation usually creates two secondary edges, which extend to, or almost to, the center of the drill and eliminate most or all of the chisel edge. Hole size and finish improve. A wide variety of split points, thinned points, and 4-, 6-, or other multiple-facet points have evolved through this method. This is an excellent drillpoint for CNC drilling applications.

2. Reform the straight chisel edge into a crowned S or helical point. Here, the S point is a continuous edge. These points (variations include Bickford™ and Racon® points) are self-centering, produce better-quality holes than conventional drillpoints, and reduce thrust requirements.

3.Combine the split point with the S point. This relatively recent innovation provides another alternative to chisel-edge geometries. Brand names include Hosoi, Sandvik, Valenite, and Mitsubishi New Point. A word of caution: These exotic drillpoints have exotic price tags to match. In many instances, they are resharpenable only at specific, licensed locations. Resharpening these points in-house generally requires an expensive machine, though there are more affordable machines emerging on the market that can do the job.



Alternatives to the conventional drillpoint (A) include a 118 degree or 135 degree split point (B), a helical or S point (C), or a combination point (D), in this case a Dijet-Hosoi point with a brazed carbide blade

KEY CODES

Fort/Waterloo/Craftsman

LL 61-139

KEYBLANKS:

Fort	54A
Ilco	1041E
Curtis	CG22

LL 226-275

KEYBLANKS:

Fort	54A
Ilco	1041T
Curtis	CG16

WW1001W-W1050W

KEYBLANKS: Even Codes

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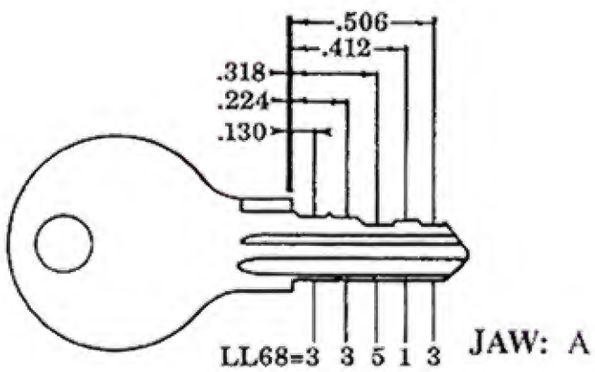
Ilco	1041T
Curtis	CG16

KEYBLANKS: Odd Codes

Fort	54B
Ilco	1041TR
Curtis	CG29



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Fort/Waterloo/Craftsman

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233	53131	258	35331
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Fort/Waterloo/Craftsman

LL151W-LL175W

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Curtis	CG22

LL3001-3050

KEYBLANKS:

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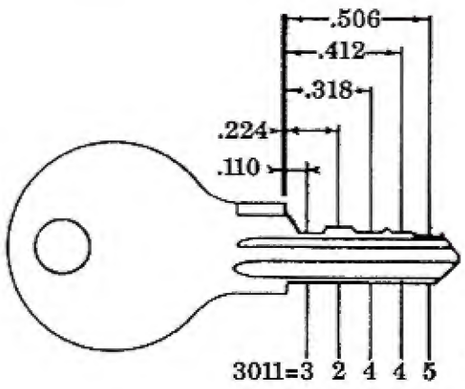
Ilco	R1096EN



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DEPTHS

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KEYWAYS

FORT

54A

54B

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Continued on page 102

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LL201H-LL225H
KEYBLANKS:

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Ilco	1041E
Curtis	CG22

LL2001-2050
KEYBLANKS:

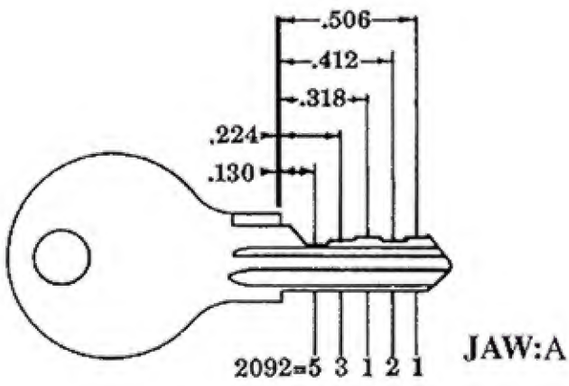
Fort	54A
Ilco	1041E
Curtis	CG22

LL20051-2101
KEYBLANKS:

Fort	54D

LL4001-4050
LL4201-4250
KEYBLANKS:

Fort	54C
Ilco	S1000V
Curtis	C068



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Continued on page 104

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Fort/Waterloo/Craftsman

2001 2050 HURD

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2051-2101 HURD

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12	13522	12	14522
13	15232	13	15242
14	15325	14	15425
15	15552	15	15552
16	21135	16	21145
17	21232	17	21242
18	21223	18	31334
19	21321	19	21421
20	21455	20	21455
21	21552	21	31553
22	22135	22	22145
23	22141	23	22141
24	22225	24	22225
25	22322	25	22422
26	22313	26	22414
27	22553	27	22554
28	22545	28	22545
29	23132	29	24142
30	23225	30	24225
31	24221	31	24221
32	23313	32	24414
33	23352	33	24452
34	23535	34	24545
35	25255	35	25255
36	25452	36	25352
37	25545	37	25535
38	31123	38	41124
39	41221	39	41221
40	31212	40	41212
41	31244	41	41255
42	31342	42	41452
43	31333	43	41444
44	32423	44	32423
45	32115	45	42115
46	32212	46	42212
47	32255	47	42255
48	32333	48	42444
49	42522	49	42522
50	33115	50	44115

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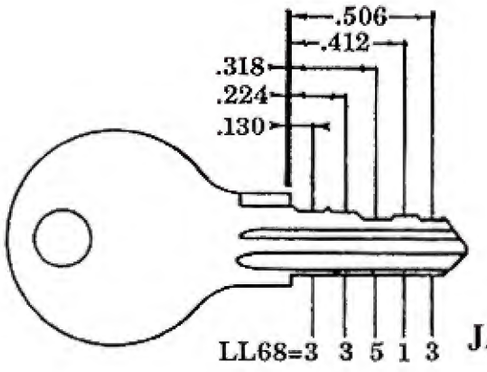
Fort/Waterloo/Craftsman

01-520 FORT

KEYBLANKS:

Original	54G
Ilco	1054G
Dominion	54G



DEPTHS		KEYWAYS
INCHES		FORT
1.	.250	54A
2.	.235	
3.	.220	
4.	.205	
5.	.190	54B
6.	.175	

01-520 FORT

	0001		0030		0061		0092
01	35355	30	13513	61	33131	92	13531
02	31551	31	33535	62	51315	93	13313
03	33555	32	53155	63	35133	94	55315
04	15551	33	31155	64	53315	95	15335
05	51133	34	31533	65	35551	97	55351
06	33511	35	31331	66	15313	98	33513
07	31555	36	55313	67	55355	99	33335
08	53353	37	55131	68	33531	100	35353
09	53131	38	55511	69	35513	01	13153
10	33113	39	33355	70	53311	02	35113
11	53533	41	15331	72	53113	03	51155
12	13535	42	11553	73	35155	04	31333
13	53151	43	13155	74	15351	05	51531
14	51333	44	53135	75	55133	06	15155
15	15153	45	15315	76	35533	07	55333
16	51513	46	11355	77	33311	08	15151
17	31355	47	11533	78	15513	09	13335
18	53331	48	33553	79	35333	10	35511
19	51151	49	33313	80	11555	11	55535
20	31135	50	55511	81	53351	12	11551
21	15531	51	35313	82	13133	13	31313
22	53553	52	55353	83	13553	14	31535
23	11513	53	33351	85	11333	15	55311
24	53511	54	13115	86	55331	16	51335
25	33151	55	15535	87	11315	17	15553
26	51355	56	15133	88	51331	18	55135
27	15333	57	33353	89	13151	19	35351
28	35531	58	13551	90	53313	20	15115
29	33155	59	53333	91	51313	21	31351

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Fort/Waterloo/Craftsman

01-520 FORT

	0122		0147		0175		0230
22	53355	47	15113	75	51353	30	31511
24	33551	49	33133	76	15355	38	51135
26	13351	50	35315	77	33533	42	11153
27	15533	51	15555	78	31133	44	11331
28	35311	53	11515	79	11535	45	11351
29	15353	54	53531	80	31515	49	11551
30	15135	55	35153	81	51555	52	13135
31	13511	56	51153	82	53153	53	13151
32	35515	57	55531	84	13315	60	13533
33	13331	58	35135	86	13353	74	15511
34	55515	59	31513	88	31353	81	31115
35	33153	61	51535	89	55335	88	31335
36	15131	62	33331	90	35553	95	31553
37	51351	63	55115	91	33115	300	33315
38	13515	64	51533	92	55151	07	13113
39	55513	66	13555	93	35535	08	55155
40	35151	68	31531	95	11353	09	33515
41	55553	69	13333	96	35555	10	35111
42	11335	70	55533	97	13355	11	53133
43	51513	71	31315	99	55113	12	53513
44	51533	72	31153	222	11531	13	35115
45	35335	73	33135	26	31113	14	11313
46	55153	74	35331	28	31151	15	51131

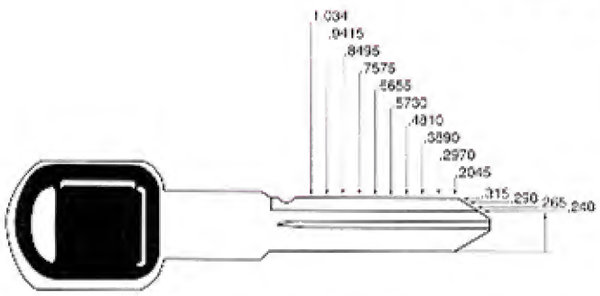
Fort/Waterloo/Craftsman

01-520 FORT

0316		0342		0406		0470	
16	53115	42	24424	05	22442	70	24244
17	55111	43	42442	08	22464	71	44644
18	31311	45	24426	10	42244	72	44222
19	51551	48	26664	11	24646	74	46444
20	51113	55	22424	18	24222	76	24464
21	53535	59	24246	19	42264	78	46446
22	15311	60	42426	20	44664	87	64466
23	53111	62	64646	21	24242	88	46644
24	53551	63	42646	23	26444	92	44224
25	51311	65	46464	26	26464	93	44426
26	13311	66	44422	27	42446	94	66444
27	35131	68	24224	31	26446	95	44246
28	53515	70	64664	34	22426	96	24264
29	51115	72	24644	35	44242	97	46466
30	51511	76	42224	37	24422	98	66446
31	31131	77	42444	42	24266	500	64666
32	51553	79	24664	44	22264	03	24442
33	53555	84	64446	55	42422	06	26466
34	51515	86	42242	56	22242	08	44266
35	33111	88	22646	57	42424	11	42464
36	13131	90	22664	59	44646	13	42466
39	44424	91	46664	62	44264	18	64464
40	66646	92	42664	68	42246	19	44244
41	46646	403	66464	69	26644	20	42644

KEY CODES

1994 GM Codes
C000-C999



The new 1994 GM code series includes 405 pages of over 100,000 active codes. GM, however, is not using all of the codes in any given year and the codes are being picked at random. To better serve the locksmith, over the next few months *The National Locksmith* is printing only those codes that have been confirmed to be in use on this year's GM vehicles. If you have a code that is not included, you can get the bitting by calling us at (708) 837-2044.

Spacing and Depths using Universal Micrometer Card #58.

	Spacing	Depth
1	.1850	.315
2	.2775	.290
3	.3700	.265
4	.4625	.240
5	.5550	
6	.6475	
7	.7400	
8	.8325	
9	.9250	
10	1.0175	

Key Profile

HPC 1200 CM
Continental Code Card - #215
Cutter - CW1011
Stop - 1054R Tip Stop (Ford 10-Cut)

Framon
Cut start - .216"
Cut to cut - .092", Spacing Block #3
Cutter - FC8445
Key Clamping - Lay spacing clip F2MS552 flat on left side of vice and align from tip.

Curtis
Cam - GM8
Carriage - GM6A

KEY BLANKS

B&S	5995936
Silca	GM37(EP)
Curtis	B82
Ilco	P1102
Jet	B82(PH)
EZ	B82
ESP	B82

1994 GM Codes
C000-C999

C000	1213423424	C059	1221232134
C001	1221312432	C060	1221344222
C002	1213223313	C061	1213321342
C003	1213221342	C062	1213342313
C004	1223123112	C063	1213423433
C005	1223213113	C064	1213233243
C006	1213343432	C065	1223242313
C007	1223313124	C066	1223212434
C008	1221242433	C067	1213422342
C009	1213211334	C068	1213322334
C010	1223113432	C069	1213243223
C011	1221334212	C070	1213313242
C012	1223234324	C071	1213211344
C013	1223132312	C072	1213324423
C014	1221134323	C073	1213243224
C015	1223211343	C074	1213212434
C016	1221323444	C075	1213232342
C017	1213443132	C076	1221331342
C018	1213342323	C077	1221313434
C019	1223244232	C078	1221324343
C020	1221313224	C079	1213312123
C021	1223213324	C080	1213234313
C022	1221312422	C081	1223112424
C023	1213211244	C082	1223313212
C024	1223123212	C083	1223113124
C025	1221124244	C084	1223124333
C026	1223134233	C085	1223134322
C027	1213321332	C086	1221121333
C028	1213244222	C087	1213134323
C029	1213322344	C088	1223311324
C030	1223213343	C089	1213442344
C031	1221343312	C090	1221212313
C032	1213424243	C091	1221334423
C033	1213311334	C092	1213423313
C034	1213223432	C093	1221323244
C035	1221232133	C094	1223131223
C036	1213442312	C095	1221321124
C037	1223122443	C096	1213342233
C038	1213233424	C097	1213443312
C039	1221242313	C098	1213213324
C040	1213433132	C099	1213431312
C041	1213423344	C100	1221332124
C042	1223133122	C101	1223312312
C043	1213431242	C102	1223321244
C044	1221213123	C103	1221313443
C045	1213232243	C104	1213224324
C046	1221211332	C105	1223243123
C047	1213231133	C106	1213311344
C048	1223231243	C107	1223242132
C049	1213434212	C108	1221343234
C050	1213421324	C109	1213213442
C051	1213432242	C110	1223112333
C052	1223131344	C111	1223113424
C053	1223243424	C112	1213322433
C054	1213233213	C113	1213431334
C055	1213242442	C114	1221312123
C056	1223213344	C115	1213311243
C057	1221132334	C116	1223312442
C058	1213231324	C117	1221123242

1994 GM Codes

C000-C999

C118	1213242212	C146	1223244334	C174	1213442134	C202	1221331323	C230	1223231332
C119	1221342423	C147	1213432442	C175	1221123424	C203	1223312123	C231	1213242323
C120	1223123434	C148	1221331213	C176	1213312244	C204	1213343123	C232	1213421244
C121	1213221133	C149	1221231213	C177	1213244234	C205	1221123132	C233	1213324312
C122	1221322132	C150	1213321243	C178	1213223423	C206	1223134334	C234	1223311233
C123	1213213322	C151	1223122442	C179	1213421342	C207	1223221313	C235	1213313444
C124	1213212444	C152	1213433112	C180	1213343224	C208	1221234242	C236	1223311242
C125	1213423342	C153	1221224434	C181	1223221132	C209	1213434213	C237	1213342422
C126	1221124433	C154	1213234422	C182	1223123342	C210	1223243243	C238	1223113244
C127	1221133132	C155	1221234322	C183	1221123243	C211	1221321313	C239	1213344224
C128	1221233113	C156	1213324233	C184	1213231322	C212	1213311343	C240	1221124213
C129	1221313444	C157	1221133123	C185	1221131332	C213	1221123443	C241	1213432424
C130	1213443133	C158	1223132234	C186	1221331244	C214	1213343133	C242	1223243234
C131	1213213323	C159	1213213344	C187	1223132112	C215	1213312334	C243	1223212134
C132	1213431344	C160	1221332312	C188	1213421332	C216	1223231133	C244	1213311242
C133	1223132124	C161	1221334424	C189	1223313244	C217	1213343124	C245	1223221133
C134	1223242312	C162	1221233123	C190	1213421133	C218	1221331124	C246	1223312213
C135	1223112244	C163	1221332113	C191	1221231232	C219	1221134213	C247	1223132213
C136	1223121243	C164	1213423123	C192	1223313344	C220	1213224242	C248	1223231334
C137	1213211323	C165	1223243134	C193	1213232424	C221	1213224234	C249	1213423432
C138	1223131224	C166	1213431212	C194	1223133224	C222	1221321332	C250	1213323212
C139	1213234222	C167	1213432243	C195	1221134313	C223	1213422313	C251	1223244313
C140	1223134224	C168	1223221333	C196	1213244224	C224	1221123432	C252	1213343344
C141	1213232422	C169	1213224233	C197	1223112334	C225	1223311312	C253	1223113242
C142	1213213422	C170	1213431134	C198	1223242133	C226	1213223213	C254	1223223112
C143	1221132132	C171	1213243124	C199	1221221133	C227	1221231344	C255	1213423122
C144	1213221344	C172	1223133113	C200	1221134344	C228	1223134434	C256	1223231344
C145	1213442113	C173	1213322444	C201	1221312242	C229	1223234213	C257	1213221244

1994 GM Codes

C000-C999

C258	1221231332	C286	1221133122	C314	1221233243	C342	1213342112	C370	1213421233
C259	1213443424	C287	1213342432	C315	1213312323	C343	1223213312	C371	1221324344
C260	1221231133	C288	1221343224	C316	1213234424	C344	1213442212	C372	1221321132
C261	1221132424	C289	1221344234	C317	1213344242	C345	1223112442	C373	1213423213
C262	1213442334	C290	1223132424	C318	1213223442	C346	1213432443	C374	1213443243
C263	1223313134	C291	1223121244	C319	1221234232	C347	1213432123	C375	1213344234
C264	1223321334	C292	1213242322	C320	1221132432	C348	1213344324	C376	1221224342
C265	1221321333	C293	1221134424	C321	1223131243	C349	1221124234	C377	1223311243
C266	1221342422	C294	1221332442	C322	1223231343	C350	1223211233	C378	1221132312
C267	1221224343	C295	1223131342	C323	1223313434	C351	1223213422	C379	1213323342
C268	1221343233	C296	1223224434	C324	1213313243	C352	1213242242	C380	1221213122
C269	1221342232	C297	1213213212	C325	1223312243	C353	1213134434	C381	1213443242
C270	1213434234	C298	1221321342	C326	1213234342	C354	1213243132	C382	1213244242
C271	1221234213	C299	1221343422	C327	1213422134	C355	1223243113	C383	1213433212
C272	1223312242	C300	1221332343	C328	1223131312	C356	1221132213	C384	1213213244
C273	1221334222	C301	1223313433	C329	1221312124	C357	1213231134	C385	1223231232
C274	1213442323	C302	1223313222	C330	1213322434	C358	1213434424	C386	1213242244
C275	1213424322	C303	1223213234	C331	1221334243	C359	1213443422	C387	1213421123
C276	1221131344	C304	1213324324	C332	1213443223	C360	1213343423	C388	1221321343
C277	1213242234	C305	1213313323	C333	1213232134	C361	1223213244	C389	1213323423
C278	1213324424	C306	1223243422	C334	1221312323	C362	1223132434	C390	1221242132
C279	1221131343	C307	1223311244	C335	1213431324	C363	1213342132	C391	1213421334
C280	1213324323	C308	1221124232	C336	1223124212	C364	1221311344	C392	1221344242
C281	1221332123	C309	1221331343	C337	1213224313	C365	1213213313	C393	1223231233
C282	1213134423	C310	1223112243	C338	1221321334	C366	1213342342	C394	1213343234
C283	1221132242	C311	1213242123	C339	1213223122	C367	1221322434	C395	1213211342
C284	1213424342	C312	1221242342	C340	1213232344	C368	1221133442	C396	1221313233
C285	1213233113	C313	1223244312	C341	1223311333	C369	1223134244	C397	1213234224

1994 GM Codes

C000-C999

C398	1213443234	C459	1223133123	C520	1221123422	C581	1221344243	C642	1221332342
C399	1221334234	C460	1213212322	C521	1221324323	C582	1223223312	C643	1213422343
C400	1213432244	C461	1223313122	C522	1213342434	C583	1221234312	C644	1213221312
C401	1223124424	C462	1223313243	C523	1223244233	C584	1223244324	C645	1223243242
C402	1213433134	C463	1213423422	C524	1213324232	C585	1223121324	C646	1223112322
C403	1213211242	C464	1213323442	C525	1223213232	C586	1221313242	C647	1223311322
C404	1213322343	C465	1221331123	C526	1223211344	C587	1223313224	C648	1221133243
C405	1221124434	C466	1213321324	C527	1213234242	C588	1213243134	C649	1221321213
C406	1221313442	C467	1223121313	C528	1223113422	C589	1223121344	C650	1213424333
C407	1221342234	C468	1223123444	C529	1221343134	C590	1221324232	C651	1221324313
C408	1221221332	C469	1213224332	C530	1221213244	C591	1221124243	C652	1223133124
C409	1213342242	C470	1213422132	C531	1221332334	C592	1221311332	C653	1213323213
C410	1221132433	C471	1213344342	C532	1213431322	C593	1221312244	C654	1213213432
C411	1221344233	C472	1221312313	C533	1213313134	C594	1223112324	C655	1213312242
C412	1223134234	C473	1221331223	C534	1221133212	C595	1213233134	C656	1221331313
C413	1213431133	C474	1221313323	C535	1221313122	C596	1213233422	C657	1221343313
C414	1221231242	C475	1213324344	C536	1223213242	C597	1223132444	C658	1223244342
C415	1223233122	C476	1221334434	C537	1221313324	C598	1213431244	C659	1221332344
C416	1221332242	C477	1213313322	C538	1221243424	C599	1221324424	C660	1221213323
C417	1223123423	C478	1213231233	C539	1213244342	C600	1221324342	C661	1221321312
C418	1213234223	C479	1213423442	C540	1221134423	C601	1213324212	C662	1221324334
C419	1213432324	C480	1213313342	C541	1223224334	C602	1221232444	C663	1221232343
C420	1213324224	C481	1213244312	C542	1221342132	C603	1221321134	C664	1213311244
C421	1221232442	C482	1223131132	C543	1213344232	C604	1221243234	C665	1223313232
C422	1213232444	C483	1221343132	C544	1223234312	C605	1213232443	C666	1223211232
C423	1213322342	C484	1213321224	C545	1213423443	C606	1221311333	C667	1213213123
C424	1213242124	C485	1221344213	C546	1213213224	C607	1223133132	C668	1213224434
C425	1213242334	C486	1221331312	C547	1223112242	C608	1223312434	C669	1213224322
C426	1213234434	C487	1213221332	C548	1221334422	C609	1223223313	C670	1221132423
C427	1213231313	C488	1223243132	C549	1213243324	C610	1221344323	C671	1223124244
C428	1221331133	C489	1223321232	C550	1223213424	C611	1223223113	C672	1223113323
C429	1223212444	C490	1213244324	C551	1223124324	C612	1213343112	C673	1221221312
C430	1221313433	C491	1213243122	C552	1223224312	C613	1213423434	C674	1213424212
C431	1221213424	C492	1223134232	C553	1221312332	C614	1221231123	C675	1213432423
C432	1221311324	C493	1213311232	C554	1221234423	C615	1213433422	C676	1221231134
C433	1213221333	C494	1213442213	C555	1221331322	C616	1213421134	C677	1213434232
C434	1213313343	C495	1213221233	C556	1221244243	C617	1223113213	C678	1213432122
C435	1223312432	C496	1223113324	C557	1223113212	C618	1221332432	C679	1223242442
C436	1223321322	C497	1221342112	C558	1213422443	C619	1213313234	C680	1213213234
C437	1223132432	C498	1221233124	C559	1213324333	C620	1223211243	C681	1213221313
C438	1221322432	C499	1223313423	C560	1213243423	C621	1223231312	C682	1213434423
C439	1213243242	C500	1223232133	C561	1213232112	C622	1223213423	C683	1213231244
C440	1213344334	C501	1223121323	C562	1221342113	C623	1223134213	C684	1213232124
C441	1223112133	C502	1223321133	C563	1223224433	C624	1213442122	C685	1223123123
C442	1223243423	C503	1213244323	C564	1221342324	C625	1213231334	C686	1213322423
C443	1221343223	C504	1213242122	C565	1213223312	C626	1213212324	C687	1221223112
C444	1223112444	C505	1213211343	C566	1223134423	C627	1221134232	C688	1221312443
C445	1221133234	C506	1221243134	C567	1213231242	C628	1221343244	C689	1213422324
C446	1213212332	C507	1213213343	C568	1223224332	C629	1213422312	C690	1223112423
C447	1223312324	C508	1213424244	C569	1221134223	C630	1221342342	C691	1223124433
C448	1213313233	C509	1213243432	C570	1213443313	C631	1213211232	C692	1213243234
C449	1221244334	C510	1213231224	C571	1221244313	C632	1213242344	C693	1213421343
C450	1213434422	C511	1221131232	C572	1223122434	C633	1223242344	C694	1221224312
C451	1221342334	C512	1223234313	C573	1213323422	C634	1221243124	C695	1221211343
C452	1213343422	C513	1221122442	C574	1213231343	C635	1221331242	C696	1213432134
C453	1223132334	C514	1213221322	C575	1213224213	C636	1221133434	C697	1221123433
C454	1223311342	C515	1213311333	C576	1213323132	C637	1223212333	C698	1221233422
C455	1221231243	C516	1221234424	C577	1213234344	C638	1223242342	C699	1221322313
C456	1223131212	C517	1213242213	C578	1223243133	C639	1213224312	C700	1223124242
C457	1221232434	C518	1223321233	C579	1223112123	C640	1223242343	C701	1221334344
C458	1221234212	C519	1221124312	C580	1223122444	C641	1223224333	C702	1213134313

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1994 GM Codes

C000-C999

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C703	1213324422	C763	1213342424	C823	1221323212	C883	1213231323	C943	1221132124
C704	1221213344	C764	1221342322	C824	1223313343	C884	1221234244	C944	1213432132
C705	1221134324	C765	1223123424	C825	1213442313	C885	1213232242	C945	1213134322
C706	1213213232	C766	1213212213	C826	1221213342	C886	1221124233	C946	1221132123
C707	1221123212	C767	1221312433	C827	1221131334	C887	1213433242	C947	1221343222
C708	1223124343	C768	1213421132	C828	1213442434	C888	1213213124	C948	1223124234
C709	1223134222	C769	1213213132	C829	1213344222	C889	1221221313	C949	1213342213
C710	1223313132	C770	1213242434	C830	1213244243	C890	1213423244	C950	1213421243
C711	1221312234	C771	1223113233	C831	1213321132	C891	1213324433	C951	1223134312
C712	1213423133	C772	1213323434	C832	1221331232	C892	1213224232	C952	1223313422
C713	1223132133	C773	1213432342	C833	1213342113	C893	1221334224	C953	1221232313
C714	1221221333	C774	1223313233	C834	1213242132	C894	1221233132	C954	1221312133
C715	1213424432	C775	1221132122	C835	1213231243	C895	1223313424	C955	1223311213
C716	1221131223	C776	1213312424	C836	1213213424	C896	1221342243	C956	1213421242
C717	1223212313	C777	1221122444	C837	1213443113	C897	1213243222	C957	1221323134
C718	1213323134	C778	1221242113	C838	1221311342	C898	1223131133	C958	1213244223
C719	1221211324	C779	1221244233	C839	1221134234	C899	1213213423	C959	1213322123
C720	1221331224	C780	1213134424	C840	1221313422	C900	1213422123	C960	1223122134
C721	1223112432	C781	1221342434	C841	1221133224	C901	1213442133	C961	1221323112
C722	1221324212	C782	1221234334	C842	1213323433	C902	1221343424	C962	1221133244
C723	1223321132	C783	1221322443	C843	1223123443	C903	1213313324	C963	1221334244
C724	1223131324	C784	1221321322	C844	1223134424	C904	1221221334	C964	1223321134
C725	1213243434	C785	1223122342	C845	1221243112	C905	1223313432	C965	1213224244
C726	1223243233	C786	1213343312	C846	1223213323	C906	1221232312	C966	1221123133
C727	1213224342	C787	1213342343	C847	1221322134	C907	1223312244	C967	1221313313
C728	1223113224	C788	1213323124	C848	1221323242	C908	1213213342	C968	1221311243
C729	1223212432	C789	1223122343	C849	1221234342	C909	1221312322	C969	1221311224
C730	1213242422	C790	1213432334	C850	1221234344	C910	1221123312	C970	1221344224
C731	1221344322	C791	1221242343	C851	1213221324	C911	1223123432	C971	1213223443
C732	1213432432	C792	1221312442	C852	1221132444	C912	1213434242	C972	1223231244
C733	1221243312	C793	1213312132	C853	1223244323	C913	1213431342	C973	1221124423
C734	1213423234	C794	1221312424	C854	1213321323	C914	1213423112	C974	1221123134
C735	1221124313	C795	1213243312	C855	1213442342	C915	1223132423	C975	1213232123
C736	1221344223	C796	1213324432	C856	1221324422	C916	1213321334	C976	1223121333
C737	1221132442	C797	1221332234	C857	1213343134	C917	1221332213	C977	1213312442
C738	1213321244	C798	1221132342	C858	1213311233	C918	1213232244	C978	1223213133
C739	1221134432	C799	1213231312	C859	1223312234	C919	1213212334	C979	1221332243
C740	1213442333	C800	1221133242	C860	1223113132	C920	1223124342	C980	1223212433
C741	1223224432	C801	1213243422	C861	1223224313	C921	1221233424	C981	1223134242
C742	1213212243	C802	1221133444	C862	1221211333	C922	1213434324	C982	1213213433
C743	1213312243	C803	1213322134	C863	1223313342	C923	1221334242	C983	1213342332
C744	1213213242	C804	1221342433	C864	1213421232	C924	1221231124	C984	1213422434
C745	1213224433	C805	1221213313	C865	1221332433	C925	1221311343	C985	1213243244
C746	1223234233	C806	1221331222	C866	1221242134	C926	1213424224	C986	1223234424
C747	1213442324	C807	1213231342	C867	1223131322	C927	1221131224	C987	1213342423
C748	1213232313	C808	1221132434	C868	1221331122	C928	1213431323	C988	1213434223
C749	1223242134	C809	1223124213	C869	1213431222	C929	1221313424	C989	1221323123
C750	1223113223	C810	1213322113	C870	1213224343	C930	1213221343	C990	1221242443
C751	1221232112	C811	1223243313	C871	1213322133	C931	1213424213	C991	1213311324
C752	1221334322	C812	1221331344	C872	1221332313	C932	1223321324	C992	1223124322
C753	1223133213	C813	1221313244	C873	1221211323	C933	1221242333	C993	1221234243
C754	1213344212	C814	1221122433	C874	1221342124	C934	1213312213	C994	1213313132
C755	1221324234	C815	1223134313	C875	1223123442	C935	1213423242	C995	1223313442
C756	1221243123	C816	1221343123	C876	1221313343	C936	1223121232	C996	1213224243
C757	1221132344	C817	1221221132	C877	1213432213	C937	1221313134	C997	1213443224
C758	1221313322	C818	1213231212	C878	1213324213	C938	1223212332	C998	1213313423
C759	1213312333	C819	1213323443	C879	1221134224	C939	1221231244	C999	1223133424
C760	1221244212	C820	1221122443	C880	1213442432	C940	1221321243		
C761	1223213322	C821	1221342313	C881	1223133134	C941	1223231134		
C762	1223123113	C822	1213432433	C882	1223312422	C942	1223113434		

GENERAL TEST

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SPACE & DEPTH INFORMATION

Keyblanks: 5 or 6 Pin C, CE, E, EF, F, FG, F. Special "restricted" numbered keyways.

Sectional Keyway blanks: 5 or 6 pin H, J, K, L

Original Keyblank 5 Pin: 35-100-x (i.e. 35-100-C)

Original Keyblank 6 Pin: 35-101-x (i.e. 35-101-C)

Shoulder to First Cut: .231"

Cut to Cut: .156"

Maximum Adjacent Cut Specification: 7 HPC 1200 Code Card 45

Code Depth	*Root Depth*	*Bottom Pin*	*Master Pin*	*Top Pin*
0	.335	.165	none	.235"
1	.320	.180	none	.235"
2	.305	.195	.030	.235"
3	.290	.210	.045	.200"
4	.275	.225	.060	.200"
5	.260	.260	.075	.200"
6	.245	.255	.090	.165
7	.230	.270	.105	.165
8	.215	.285	.120	.165
9	.200	.300	.135	.165

Generally, the factory ships all lock cylinders with a minimum bottom pin stack height of .225" (includes bottom pin and master pins equaling a number 3 bottom pin) with .165" top pins. This practice obviously works even though previous literature recommends top pins with the above lengths. If a bottom pin stack of .195" (equal to a number 2 bottom pin) or less is used in a chamber, a longer top pin must be used in that chamber or the total pin stack will fall below the shear line. This reduces security and creates a potential for jamming a tumbler spring between the shell and plug. See the chart below for full specifications

LIGHTER SIDE

Continued from page 48

Then a couple of applications for major credit cards came in for him.

"Think we should get Wally a credit card?" Don asked.

"For what? No one could use it," I replied.

"I was only kidding," Don admitted, "but it might be fun, just to see if we could. I read somewhere about a guy getting one for his dog. He even got the animal a Social Security card, if the article is to be believed."

"Where did you see that, in the Federal Inquirer?"

"Something like that."

Everything sort of settled down, and we were getting less and less calls for our hypothetical employee, when we decided to take on another part time worker at the store. Don interviewed several in my absence, as I was traveling around the country

SHOP TALK

Helpful questions and answers

Shop Talk answers readers questions on any locksmith related topic. Only letters judged to be of general interest will be published. We regret that we cannot answer individual letters. Because of the volume of mail, only those questions answered in the magazine will receive answers. Send your questions to *Shop Talk*, **The National Locksmith**, 1533 Burgundy Parkway, Streamwood, IL 60107.

Q: I do a lot of work for one particular car dealer in town. Part of the work includes cutting keys by code. The other day they gave me a code for a Ford with the 10-cut system, but I couldn't find it. The code is 102B610. While I can find the 102 for the first number, the code book only goes up to 602 for the other number. Are there updates or is the code wrong?

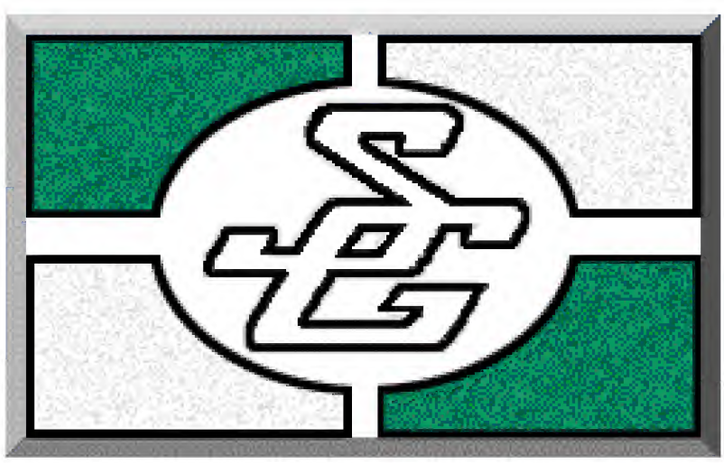
Bill Pextin
Alabama

A: To make this short, Bill, the code is wrong. In 1984-1/2 Ford introduced the 10-cut system and its different code and bitting arrangement. While variations to they system have been introduced since, the initial system had the door lock using the first six cuts of the key. The ignition used the last six cuts of the key, sharing the cuts five and six from the door.

The code series for this system runs 101A501 – 291A579, 101B501 – 332B602, 101C501 – 344C624, 101D501 – 327D602, and 101E501 – 296E579.

Important to remember while cutting these keys is that the first number in the code is the ignition bitting and is the last six cuts of the key. The second number in the code is the door bitting and is the first four cuts of the key. The letter designates from what column to pick the bitting.

You can see that each code starts out with 101 for the ignition and 501 for the door. The last code for each series, however is different. The C series has the highest series of both numbers, 344 for the ignition and 624 for the door. There are no known changes or updates at this point.



What you may try, Bill, is cut the key to 102C610 as this is the only series it could possibly fit.

Q: *I have a customer with a Gary C-50 floor safe that has been submerged for over two days due to flooding, and now it cannot be opened. Even though they know the combination, the dial is froze and cannot be dialed. What do I do?*

Jeff Litz
Missouri.

A: Apparently everything rusted up on you, Jeff. So, the first thing you want to do is lubricate the daylights out of it. If you can, pour as much penetrating oil around the door edge and up under the dial as possible. Let it soak for a good long time and then try to move the dial. Continue to spray a penetrant under the dial to wash out as much corrosion as possible. If it's still tough, try a couple of blows to the door with a mallet and try again.

If that fails you're going to have to drill and punch the bolts. To drill, angle through the concrete and down through the safe to the lock bolts. If done properly, you will penetrate the safe body at the same depth as the locking bolts. (For the correct and procedure see Dave McOmie's article on page 49 of this issue.)

Once through the safe, rotate the door until you see the end of a bolt and punch. Rotate the safe till you see the next bolt and punch. Repeat this for the third bolt. If all goes well with punching the door will lift out. If not, continue to punch the bolts until the door can be removed. Good luck!

Q: *I was called out to open a 1989 Lexus 400. When I got there a tow truck driver had already gotten the couple into the car where they were able to retrieve a valet key, but the master key was in the trunk. The valet key turned the ignition but nothing happened. When we tried it in the trunk, the key would turn but not open the trunk. The keyed trunk release lock up by the driver's seat did not operate using the valet key. What do I do?*

Bob Selvok
Illinois

A: Lexus vehicles have what they call "Smart Locks." Once the car is locked by key or the remote transmitter in the head of the master key, the status of the locks are monitored. Should an attempt be made to unlock the car without a key or the transmitter, the locks relock immediately, the ignition system is cut out and the alarm sounds. A switch on the back of the door locks are used to activate this system.

Typically a Lexus opening simply involves opening the vehicle then using the master or valet key to deactivate the lock system by locking and then unlocking the car door. The car is now ready to drive. To get the key out of the trunk, duplicate the valet onto a master keyblank.

However, knowing the techniques of most tow companies chances are good that the switch on the door used to gain entry is broken. If the switches on both doors are broken, have the customer tow the car to a dealer. Otherwise, use the valet key to lock and unlock the untouched door and deactivate the system.

TEST DRIVE

Taking Industry Products for a Spin Around the Block

KEYWATCHER DK10

PRODUCT: KeyWatcher DK10 electronic key control cabinet, from Morse Watchman Inc., 514 Long Hill Rd., Waterbury, CT 06705, 800-423-8256. Price to the locksmith is $2796. Other standard cabinets available.

PRODUCT DESCRIPTION: The DK10 is a 10-key key control system. Other models, the DK20, DK40 and custom design systems are also available. While not included with this model, the unit can be purchased with a steel security door that is controlled by an electric strike.

Keys are attached to tamperproof key rings (SK30 Smartkey) that are inserted to holding slots on the panel. (Both the tamperproof SK30 and the standard SK70 key rings were provided for this Test Drive.) A solenoid operated bolt locks the key ring in place. A data chip in the key ring records key information.

The control panel has a keypad and LCD display for programming and operating the system. Software and cables are also provided for using the cabinet in conjunction with a computer, although this is not necessary. Power is supplied via plug in transformer.

SOFTWARE SPECIFICATIONS: The software provided with the KeyWatcher is IBM and PC compatible. Both 3.5" and 5.25" disks are available.

FRIENDLINESS: With or without the computer, the KeyWatcher system is easy to install, program and use. Directions, though somewhat incomplete, are simple and easy to follow.

FEATURES: The KeyWatcher allows up to 250 users into the system (upgraded systems offering more users are being developed now). Each user is given a code number and authority level within the system. Users can be limited access to specific keys as well as days and times that they can use keys.

Morse Watchmans KeyWatcher DK10 electronic key control cabinet.

DESCRIPTION: Electronic Key Control Cabinet

COMMENTS: Tracking software is for IBM computers.

TEST DRIVE RESULTS: Though a bit pricey, the KeyWatcher is well suited for hospitals, pharmacies, and places where key control is essential.

An incorrect code entered three times sounds an alarm. The parameters for this as well as other utilities (e.g. printer test, print transactions, print delay, door sensor) are also programmed into the unit.

An audit trail can be retrieved either through the keypad or via computer for either the User or the Key, including Keys In Use and Over Due Keys.

Key use is recorder for both who and at what time it was removed and the time it was returned.

COMMENTS AND SUGGESTIONS: The KeyWatcher is an excellent means for controlling priority keys for small and large business alike. While not necessarily used by the locksmith, this product provides good profit possibilities for sales to hospitals, pharmacies, institutions, apartment managers, and companies where key control is essential.

There are only three recommendations: First, include a more thorough covering of how to connect a printer or computer to the system. Second, incorporate other reader technologies into the system (i.e. card readers, proximity cards, etc.) They may enhance user friendliness and security for companies with existing access control systems. Third, provide for a higher security, spyproof keypad.

CONCLUSION: Overall, KeyWatcher is an excellent product with good profit potential for the aggressive locksmith.